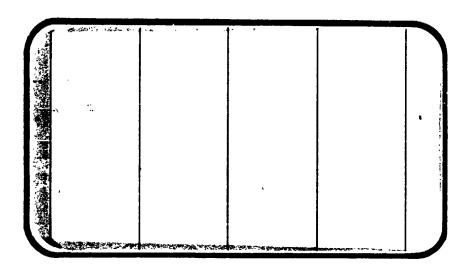


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



(NASA-CR-144580) LANDING FRESSURE LOADS OF THE 140A/B SPACE SHUTTLE ORBITER (MODEL 43-0) DETERMINED IN THE ROCKWELL INTERNATIONAL LOW SPEED WIND TUNNEL (CA69), VOLUME 1 Aerothermodynamic Data Report N76-16137

HC \$12.75

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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT



JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA MANagement services



DMS-DR-2081 NASA CR-144,580

VOLUME 1 OF 2

ANDING PRESSURE LOADS OF THE -140A/B

SPACE SHUTTLE ORBITER (MODEL 43-0) DETERMINED IN THE

ROCKWELL INTERNATIONAL LOW SPEED WIND TUNNEL

(0A69)

by

T. L. Soard Rockwell International

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Prepared Under NASA Contract Number NAS9-13247

by

Data Management Services Chrysler Corporation Space Division New Orleans, La. 70189

for

Engineering Analysis Division

Johnson Space Center National Aeronautics and Space Administration Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number:

NAAL 711

NASA Series Number:

0A69

Test Dates:

27 through 31 August 1973

Model Number:

43-0

FACILITY COORDINATOR:

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Chrysler Corporation Space Division assumes no responsibility for the data presented other than display characteristics.

LANDING PRESSURE LOADS OF THE -140A/B

SPACE SHUTTLE ORBITER (MODEL 43-0) DETERMINED IN THE

ROCKWELL INTERNATIONAL LOW SPEED WIND TUNNEL

(OA69)

by

T. L. Soard
Rockwell International

ABSTRACT

The data presented in this report were obtained during wind tunnel tests of a 0.0405 scale model of the -140A/B configuration of the Space Shuttle Vehicle Orbiter. These tests were conducted in the Rockwell International Low Speed Wind Tunnel (NAAL) during the period of August 28, 1973 to August 31, 1973. NASA Space Shuttle test designation is 0A69.

The primary test objective was to obtain pressure loads data from the orbiter in the landing configuration in the presence of the ground for structural strength analysis. This was accomplished by locating as many as 30 static pressure bugs at various locations on external model surfaces as each configuration was tested. A complete pressure loads survey was generated for each configuration by combining data from all bug locations, and this report describes those loads for the fuselage, wing, vertical tail, and landing gear doors.

Aerodynamic force data was measured by a six component internal strain gage balance. This data was recorded to correct model angles of

attack and sideslip for sting and balance deflections and to determine the aerodynamic effects of landing gear extension.

All testing was conducted at a Mach number of 0.16° and a Reynolds number of 1.2×10^{6} per foot. Configurations tested included elevon deflections of 0° , -20° , and -40° , and rudder deflections of 0° , -7.5° , and -15° . The angle of attack range was -3° to $+16^{\circ}$ with the nodel center of rotation remaining at the same height above the ground plane throughout the test. All configurations were tested at angles of sideslip of 0° and $\pm 10^{\circ}$.

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ntinued)	PLOTTED COEFFICIENTS SCHEDULE	ပ	ပ	v	ပ	ပ	U	U	a .	a	۵
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Multi-grid plots with alpha values listed at the top of each plot page. The first value listed corresponds to the left plot grid.

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PLOTTED COEFFICIENTS SCHEDULE:

- A) CL, CN, CLM, CDF, CAF, CAB, XCP/L vs. ALPHA: CL vs. CDF, CLM; L/DF vs. ALPHA
- B) CY, CBL, CYN vs. ALPHA
- C) CP vs. X/LB

- D) CP vs. PHI
- E) CP vs. X/CW
- F) IP vs. X/CV
- G) CP vs. X/LG

NOMENCLATURE General

SYMBOL	PLOT SYMBOL	DEFINITION
9		speed of sound: m/sec, ft/sec
$c_{\mathbf{p}}$	CP	pressure coefficient; $(p_1 - p_{\infty})/q$
M	масн	Mach number; V/a
P		pressure; N/m², pst
q.	Q(NSM) Q(PSF)	dynamic pressure; 1/2 pV ² , N/m ² , psf
rn/l	RN/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
Ų	PSI	angle of yaw, degrees
φ	PHI	angle of roll, degrees
P		mass density; kg/m^3 , slugs/ft ³
	Refe	rence & C.G. Definitions
Ab		base area; \mathbf{m}^2 , \mathbf{ft}^2
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
REF	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing srea or reference area; \mathbf{m}^2 , \mathbf{ft}^2
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRF	moment reference point on Z axis
SUBSCRIPTS b		base
1 3		local static conditions
t oo		total conditions free stream

NOMENCIATURE (Continue a)

Body-Axi / Cystem

CYMBOL	PLOT SYMBOL	DEFINITION
c^{n}	CN	normal-force coefficient: normal force
c_A	CY	axial-force coefficient: (in force
$c^{\mathbf{A}}$	СУ	side-for a coefficient; side force
c _V P	CAB	base-force coefficient; $\frac{\text{paper force}}{\text{qr}} = -A_b(p_b + p_b)/q_b$
$^{\mathrm{C}_{A_{\mathbf{f}}}}$	CAF	forebod. (distance coefficient, $c_A + c_{Ab}$
c_{m}	CIM	pitchin -moment coefficient; pitching moment ${}_{\mathrm{QC}}\ell_{\mathrm{REF}}$
c_n	CYN	yaving-moment coefficient; Viwing moment
c 1	CBL	rolling-moment coefficient: rolling moment
		Stability-Axis System
$\mathbf{c^{T}}$	CF	lift conflicient; lift
c^{D}	מי	drag contricient; ar :E
$^{\mathrm{c}}_{\mathcal{D}_{\mathbf{b}}}$	CDB	base-drag coefficient; $\frac{\text{base ir} n_E}{qC}$
${}^{\mathfrak{C}}D_{\mathbf{f}}$	CDF	forebody drag coefficient; $\ell_{\rm B} = \ell_{\rm B}$
$c_{\mathbf{Y}}$	CY	side-force coefficient; (ide force)
$c_{\rm m}$	CLM	pitching-moment coefficient, Pitching moment
c _n .	CTN	y ing-moment coefficient; Yowing moment
c f	COL	rolling-moment coefficient; rolling moment
r/D	r/d	lift-to-drag ratio; $c_{\mathrm{I}}/c_{\mathrm{D}}$
L/Df	I./DF	lift to forebody drag ratio; $c_{\rm i}/c_{\rm ig}$

NOMENCIATURE (Continued) Surface Deflections

Symbol	Plot Symbol	Definition
δ _e	ELEVON	elevon surface deflection angle, positive deflection, trailing edge down; degrees
δ _f	BDFLAP	body flap surface deflection angle, positive deflection, trailing edge down; degrees
δ _r	RUDDER	rudder surface deflection angle, positive deflection, trailing edge to the left; degrees
	A	DITIONS TO STANDARD NOMENCEATURE FOR TEST 0A69
Symbol	Plot Symbol	Definition
x/e _B	X/LB	fuselage local coordinate, longitudinal distance from the nose expressed as a fraction of body length $X/LB = \frac{F.S 235}{1296.3}$
		(F.S. = full scale fuselage station)
φ	PHI	fuselage local coordinate, radial position angle measured from the bottom centerline in degrees, 0° to 180° on both sides.
n, <u>y</u> b/2	Y/BW	wing local coordinate, spanwise distance from model centerline expressed as a fraction of wing semispan.
x/c	X/CW	wing local coordinate, chordwise distance from the local leading edge expressed as a fraction of local chord.
n_V , $\frac{z}{b_V}$	Z/BV	vertical tail local coordinate, vertical distance from W.L. 500 (full scale) expressed as a fraction of the vertical tail height measured from W.L. 500.
x /ç	X/CV	vertical tail local coordinate, chordwise distance from the local leading edge expressed as a fraction of local chord.

NOMENCIATURE (Concluded)

Symbo'	Flot Symbol	Definition
x/lg	X\PG	landing gear door local condinate, distance from the leading edge expressed as a fraction of door length.
x/h _C	Z/HG	landing gear door local coordinate, distance from the upper edge expressed as a fraction of the door width.
A_{BC}		balance chamber area, ft.2
$\mathrm{c_{A_{BC}}}$		balance chamber axial force coefficient.
c_{AT}		weight tare axial force coefficient.
CAU		uncorrected axial force coefficient.
CRFS	•	model longitudinal center of rotation, in fus. sta.
CRML.		model vertical center of rotation, in. W.f.
	GP.POS	wing trailing edge height above ground plane, fraction of wing span, at $\alpha = 0^{\circ}$
P_{B}		base pressure, psia.
$P_{\overline{BC}}$		balance chamber pressure.
P_{RI} , P_{RP} , -	F _{BS}	base pressure at stations 1, 2,5, respectively, psia.
x_{ep}/L_B	xcr/L	longitudinal center of pressure, fraction of body length.

Cattle Edition of the Control of the Control

The model tested was an 0.0405 scale representation of the -140 A/B configuration of the Rockwell International Space Shuttle Vehicle Orbiter. The model was constructed about an aluminum balance block with a 4.25 inch diameter balance cavity. The body mold lines, wings, and vertical tail attach directly to this block, and all model components are constructed of wood and/er aluminum.

The basic model configuration is of the blended wing-body design utilizing a double delta wing $(73/45 \Lambda_{\rm L.F.})$, full span elevons (unswept hingeline), a centerline vertical tail with rudder and/or speedbrake capability, and side mounted manipulator arm housings. A canopy, body flap, orbital maneuvering system, and landing gear attach to the fuselage and complete the basic configuration.

The following nomenclature designates the model components used during this test.

Co. Nederlation In The Market (Concluded)

Component	Description
820	-140A/B Baseline Fuselage
c ₉	-140A/B Baseline Canopy, Configuration 3A
E 20	Full Span Split Elevon used on Wing
	W ₁₁₀ , Configuration 4.
F 8	Fuselage B ₂₀ Body Flap, Configuration 4
G ₁₅	Landing Gear
M ₇	Fuselage B_{26} Oms Pods, Configuration $3A$
R ₅	Rudder used on Vertical V_8 , Configuration $3A$
V ₈	-140A/B Baseline Vertical Tail,
	Configuration 3A
^h 110	-140A/B Baseline Double Delta Wing,
	$S_W = 2690 \text{ ft}^2$
$X_{\mathfrak{g}}$	Transition Grit, .0054 In. Diameter
	on Nose, .0077 In. Diameter on Wings
	and Vertical Tail

TEST FACILITY DESCRIPTION

North American Aerodynamics Laboratory (NAAL) 7.75 x 11-foot Wind Tunnel is a continuous flow, closed circuit, single return tunnel capable of speeds up to 200 miles per hour.

The test section is vented to atmospheric pressure and is 7.75 x 11 feet wide and 12 feet long. Power is supplied by a 1250-horsepower nacelle-mounted synchronous motor driving a 19-foot, seven-blade, laminated birch propeller. Airspeed is controlled by using a magnetic clutch to vary the degree of coupling between the motor and propeller. Turbulence is minimized by a damping screen and a honeycomb section in the settling chamber upstream from the contraction cone (ratio 7.53 to 1).

Tests may be conducted using a variety of mounting systems: single strut, double strut, sting strut, reflection plane, cable suspension, or two-dimensional wall. Aerodynamic data may be measured by a planar type external balance system or sting-mounted internal balances. An Astrodata Automatic Data Acquisition System collects, multiplexes, digitizes, and records on magnetic tape 50 channels of force or pressure data or both. Data are then reduced and plotted using automatic data processing equipment and an automatic digital plotter.

The NAAL Wind Tunnel has been operating since June 1943. Calibrations are available over a wide range of test conditions.

DATA REDUCTION

All model force and pressure data was reduced to coefficient form in both the body and stability axis systems. Model angles of attack and sideslip were corrected for sting and balance deflections in addition to the standard facility corrections (wall interference, blockage effects, etc.) applied as required.

Axial force (body axes) was corrected for model weight tare in addition to base pressure effects. Corrections were made prior to the calculation of stability axis data. Axial force corrections were applied in the following manner:

$$c_{AF} = c_{AU} - c_{A_{BC}} - c_{AB} - c_{AT}$$

Whe re

$$|C_{A_{\overline{BC}}}| \leq \frac{|P_{\overline{BC}}||P_{\overline{O}}|}{q} = \frac{|A_{\overline{BC}}||P_{\overline{O}}||}{|S_{\overline{K}}||}$$

And

$$C_{AB} = \frac{P_B - P_O}{q} = \frac{AB}{S_W}, \quad P_B = 1/5 (P_{B1} + P_{B2} + ... + P_{B5})$$

And

 $C_{\overline{AT}}^{-1} \sim Model Axial Force Weight Tare$

Center of pressure was computed in percent of body length as indicated below:

$$XCP/LB = C.G.$$
 (In. Aft of Nose) $-\frac{C_m}{C_N}$

DATA REDUCTION - Continued

All model pressure measurements recorded were reduced to coefficient form in the following manner:

$$c_{p_i} = \frac{P_i - P_o}{q}$$
, $i = pressure orific number$

All aerodynamic data were reduced to coefficient form using the following reference dimensions:

Symbol	Definition	Full Scale	Model Scale
$A_{\mathcal{B}}$	Area of base, ft? (with OMS) (without OMS)		.594 .440
A_{BC}	Area of balance cavity, ft ²		.0985
XMRP	Reference C.G., in. aft of nose , fus. sta.	841.47 1076.47	34.080 43.597
ZMRP	Reference C.G., waterplane	400.00	16.200
CRIS	Model center of relation, this s	ta.	47.703
CRWP	Model center of rotation, waterp	lane	7.503
e _p	Moment reference (orbiter body) length, in.	1,90.30	52,057
7	Area of wing, ft ²	10.003	4.412

TEST: 0A69, NAAL 711 DATE : Hat icat TABLE I. TEST CONDITIONS REYNOLDS NUMBER DYNAMIC PRESSURE STAGNATION TEMPERATURE MACH NUMBER (pounds 'sq. inch) (per unit length) (degrees Fahrenheit) 0.165 40 LE, T2 90 - 120°F $1.20 \times 10^6/FT$ TASK 2.5 INCH MK IX BALANCE UTILIZED COEFFICIENT CAPACITY ACCURACY TOLERANCE. 1500 LB. + .25% NF 750 LB. + .25% ŗ .25% 200 LB. ΑF PM + .25% 4000 IN-LB. RM YMCOMMENTS:

TABLE II

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CONFIGURATION SCHOLPANETERS, LALES NO. WACH NUMBER COLLATION SUMMARY CONFIGURATION OF B 22 27 A. D.											
CONFIGURATION 1	1		DATA	SET R	UN NUM	BER	COLLATION	SUMMARY	- 1	12	
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	v				X	Ì	1				

MODEL GEOMETRY FOR EACH MACH & & MAIN L.G. LOOR INSIDE * MAIN L.G. 20012 JUTSIDE Co TSIDE DOJE INSILIT REPRESENTS COMPONENT IDENTIFIER MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE Test DOOR · COLATED AS A FUNCTION OF THE SETS SEGERGATED BY Pob OUTSIDE FUSELAGIE * MOCEL COLVENING VERTICAL TILL WING VERTICAL IT IL DATE: Post-LOVICE VING VPPER WING OMS POD INSIDE NOST 1.6. FLAP UFFFC NOT E · PRESSURE DATA 315th RODY O M O 1337 RIGHT LEFT 小 LEFT ANUC THEFT 小(EFT LEET LFF7 LEFT DATA SET, RUN NUMBER COLLATION SUMMARY ↑ Wux SIDES TABLE II (Continued)
PRESSURE DATASET/COMPONENT SUMMARY スニス シーX エーメ NOTES. CCEFFICENTS * OPPOSITE .165 MA NO. OF RUNS Ž 37 PARAMETERS/VALUES -M29 3 25 O S 0 T 30 Q. -40 0 0 മ 9-SCHD. $\dot{\mathcal{C}}$ 0 0 0 O 9 OQ 8 4 (NAAL 7//) RDOX O3 BSGG, PAE WINE WARS NO 6 COMFIGURATION 4 र्ठ **0**469 83 33 33 05 9c DENTIFIER 8 08 DATA SET 6 \overline{Q} 8 5 3 A 9 Rinn TEST: Ţ 19

TABLE II (Continued)
COMPONENT/PRESSURE I.D. NUMBER SUMMAR

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	ن	COMPONENT/PRESSURE I.D.	RESSURE I.	. NUMBER SUMMARY	
COMPONENT NAME	DATASET I.D. RDQ	PRESS. I.D.	CONTROL DEFLECT. Se SR	PRESSURE BUG (see table IV for	LOCATIONS complete list)
RIGHT FUSELAGE *	A12-17	1-16 25-30	0 0 0 0	X/LB < .732 (F.S. 1180) X/LB > .783 (F.S. 1245)	0) LEFT 5), PHI > 90° RIGHT
LEFT FUSELAGE	803-11	1-10	0 WOW	X/LB < .236 (F.S. 540) X/LB > .302 (F.S. 625)	
LEFT FUSELAGE	812-17	1-16 25-30	0 0 NOM	X/LB < .732 (F.S. X/LB ≥ .783 (F.S.	1180) 1245), PHI <u>2</u> 90
MLG DOOR OUTSIDE MLG DOOR INSIDE	G03-11 H03-11	8-10	0 0 NOM 0	x/LG < .20 x/LG > .30	
LEFT LOWER WING * LEFT UPPER WING *	103-11 103-11	11-16	O MON	(Y/BW = .299, X/CW < Y/BW = .352 RIGHT Y/BW = .299, X/CW > Y/BW = .299, X/CW > Y/BW > .405 LEFT	.222 RIGHT .358 LEFT
LEFT UPPER WING * RIGHT UPPER WING *	U12-17 W12-17	11-16	0 0	(Y/BW - 299, X/CW < (Y/BW = .352 RIGHT	.222 RIGHT
		11-22	0	(Y/BW = .299, .359 <) (Y/BW = .405, X/CW <) (Y/BW > .534 LEFT	< X/CW < .695 LEFT < .574 LEFT
		25-30	MON 0	(Y/BW = .299, X/CW > (Y/BW = .405, X/CW >	.831 LEFT & RIGHT .763 LEFT & RIGHT

For the right fuselage and all wing datasets, the complete surface is represented by combining data from opposite sides and sideslip angles.

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		ن		E II (Col	ntinued)	,	COMPONENT/DESCHIPT	
	Composition	1-		CONT	I.U. NUMB	ER SUMMARY	(Concluded)	
	CONFUNENT NAME	I.D. RDQ	PRESS. I.D.	DEFI DEFI	DEFLECT.	, Ad	ESSURE BUG LOCATIONS	1
	BODY FLAP	603		e o	ago W	(see ta	(see table IV for complete list)	
		103-11	22	NOM	0	ALL		
	BODY FLAP	F12-17	30	0	NOM	ALL		
	OMS POD OUTSIDE OMS POD INSIDE	M03-11 N03-11	22	NOM	0	ALL		
	OMS POD OUTSIDE OMS POD INSIDE	M12-17 N12-17	30	0	NOW	ALL		
21	NLG DOOR OUTSIDE NLG DOOR INSIDE	J03-05 K03-05	1-8	0	0	ALL		
	RIGHT VERT. TAIL	R12-17	23-30	MON 0		ALL		
	LEFT VERT. TAIL	V03-11	15-22	NOM 0		ALL		
-	LEFT VERT. TAIL	V12-17	23-30	WON O		41.1		
I						ī		

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TABLE II. TEST

DATA SET COLLATION SHEET (Continued)

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D. PRESSURE I.D./RUM NUMBER SUMMARY

O PRETEST

DATA SET	The state of the s	SCHD	Γ.	CONTROL	OL DE	FLECT	NOI.	NO.	PRESSURE	SUPE	10		3 5	-KAGH NUMBERS	S				
IDENTIFIES	COMPTENTALLOR	ŋ	8	8	8r	7 35	2	- S.F /7 RUNS	8		2	B	4	5	Q	7	8	6	0/
2.2	BEK - GG	1	9	C	0	1.824	./65		202										
		<u>-</u>	5-						203										
			0						201										
			5						205										
	BOK	-	8						66.	1	7	1	0/	13	9/	61	22	52	87
			0						200	Ŋ	5	8	//	14	11	02	23	92	62
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		- 1	1	4		1	1	1	1	4		1		1		1	1	4	1
COEFFI	TENTE: ZA:	-3:0:5:10:	13.	13.16												7	PVAR(17 (12)	IDPVAR(1) IDPVAR(2) NDV
a or 8		ŀ																	
			ľ	۱	ŀ		1	k				1							

TABLE 'II. TEST

DATA SET COLLATION SHEET (Continued) 0A69

O PRETEST

D.PRESSURE I.D./RUN NUMBER SUMMARY (Continued)

F POSTTEST

		-							r							9	200	2	<u>:</u> [
			100	1	101	NINOT	F	PRESSURE	Ł	22	*	HAGH- NUMBERS	1BERS		ŀ		}	-	T
DATA SET	CONFIGURATION	SCHD.	3	Sr	SETTECTION OF	\[\frac{1}{\chi} \]	S		l. 🔪		14/	15-1	16 1	1/1/	181	19 20	2/2/	722	2
	RASIL	╅┵		1	1 10	6		31		52 6	. 19	20	79	88	145 103	3 .15	abla		38
9002	2000		_	Ţ		-		1.	 	├—	. 79	11/	80	89 14	146 10		_		137
) \(\q	-					├─	45	K	 	2%	<i>'</i> 8	8	301 /2/	21.12	7 126		38
			- 18			-		+	╁	1.	23	├	1/2	N 15	121 100		121 811	- }	g
		0/				-			-	56	-		\vdash	26 26	101 251		119 122		1ª
		3	+	1		+		1.	+	+-	3	8	78	93 %	153 108		120 123		B
		2/5	9	+				┼	1	 	2	\vdash	82	85 97	140	1 601	112 127		श्च
						F		 	47	3	65.	89	83	86 48	641	101	113 12		13/
		4/0	9	-	-	-			├-	15	6 6	69	8	87	8	/ ///	1/4 //	129 1	135
		1	1	_						-		-					4	\dashv	
2:			-				-	1						_			_	\dashv	
3 .			-	_						. * 	*NOTE:	RIIN	RITH NOS.	145-15	145-150 ARE FINAL DATA FOR	FINAL	DATA	FOR	7
			_	_				-	·	I		VERT	ICAL	PAIL F	VERTICAL TAIL PRESSURES ONLY. ALL	ES ON	LY. /	13 2	
		†	+	-						1		OTHE	R PRE	SSURE FFD 11S	OTHER PRESSURE DATABLE COMPONENTS AND SOLITAMENT HERMANDS. OF 10			<u> </u>	
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	7 13	19		2.5		31		37	4.3		64	1	55		<u>[</u>		2		
	<u> </u>	-			-	1		-	4	1	1	1	1	1	1				
COEFF	1	.07.0	120	07/												VAK	HIDEVAK(17) 10F VAN(27) (127)	44 (F)	3
8 TO 8	S.H.	7	K																
SCHEDILES	LES		1	10	4/11	100	12 60 4/11 FOLVARSX9	5X3			1								
	DASIC: 026 CY 5/2/1	756 57 57		Ø							I								

A Now Stations

0A69 TEST TABLE 'II.

COLLATION SHEET (Concluded) DATA SET

Bar and Land Branch

PRESSURE I.D./RUN NUMBER SUMMARY <u>.</u>

PRETEST

F POSTTEST COLLATED IDPVAR(1) IDPVAR(2) | NDV 62 NOT 194 86/ 561 96/ 2 16/ 88/ 61 06/ 761 189 161 181 50 +MOH- NUMBERS 187 82 183 184 185 8 18 52 179 08/ 178 175 116 111 25 26 27 188 172 173 174 164 167 69/ 64 166 121 01/ 153 3 163 PRESSURE ID 159 162 je 155 158 154 151 24 122 143 144 133 3 141 CONTROL DEFLECTION NO. Se Sr St NY RUNS -150 ô AA - 3.0.5.10:13:16. 25 ö 1/0 410 Ş 0 0/-0 1/0 **\$** SCHD. ø CONFIGURATION BASK= BASIC COEFFICIENTS: a or B SCHEDULES DATA SET IDENTIFIER व्य

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BZL CGGIS MAFB WILL EZL VBRSXG

TABLE III. MODEL DIMENSIONAL DATA

MODEL COMPONENT: BODY - B26		
GENERAL DESCRIPTION: Orbiter Fuselage Config	guration 140 A/B	
NOTE: Boo identical to Bou except underside	e of fuselage refa	ired to
accept W ₁₁₆ .		
Model Scale = .0405		
VI.70-000193 VI.70-000140A		
DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length (Body Fwd Sta $X_0 = 235$) - in.	1290.3	52.25715
Max. Width (at $X_0 = 1520$) - in.	262.0	10.61100
Max. Depth (at $X_0 = 1464$) - in.	250.0	10.12500
Fineness Ratio	4.92481	4.92481
Area - ft ²		•
Max. Cross-Sectional	340.88462	0.55914
Planform		
Wetted		
Base	**************************************	

MODEL COMPONENT: CAMOPY - C9	;	
GENERAL DESCRIPTION: Configuration 3A	í.	
Kodel Scale = .0405		-
DRAWING NUMBER V170-000140% V170-000142%		
DIMENSION:	FULL SCALE	MODEL SCALE
Length (X ₀ =434.643 to 670)	235.357	9.53196
Max Width (G X ₀ =513.127)	152.412	6.17269
Mox Depth (1 X ₀ =485.0)	25.000	1.01250
Fineness Ratio		
Area	,	
Max Cross-Sectional		
Planform		
Wetted		•
Base		٠

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MODEL COMPONENT: FIEVON - E26	•	
GENERAL DESCRIPTION: Configuration 4		
NOTE: VL70-000400 data for (1) of (2)	sides. Identical	to E ₂₅ except
airfoil thickness		
Model Scale = .0405		
VL70-000400 VL70-000140 B		
DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area	223.5814	0.36673
Span (equivalent)	368.34	14:91777
Inb'd equivalent chord	119.623	4.84473
Outb'd equivalent chord	55.1922	2.23528
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	0.2096	0.2096
At Outh'd equiv. chord	0.4004	0.4004
Sweep Back Angles, degrees		
Leading Edge	0.00	0.00
Tailing Edge	-10.056	-10.056
Hingeline	0.00	0.00
Area Moment (Normal to hinge line)	<u>851.150</u> 2	0.05654

MODEL COMPONENT: Body Flap - F8		
GENERAL DESCRIPTION: Configuration	4	
Model Scale = .0405 DRAWING NUMBER VL70-0001	40B, VL70-0004 00	
DIMENSION:	FULL SCALE	MODEL SCALE
Length in.	94.856	3.84167
Max Width in.	262.308	10.62347
Mox Depth in.	23,000	0.93150
Fineness Ratio		
Area - ft²		
Max Cross-Sectional		
Pla nform .	158.85350	0.26056
Wetted		
Base	41.89642	0.06872

MODEL COMPONENT: LANDING GEAR - G15		
GENERAL DESCRIPTION: Main and nose landing g	ear, doors, and a	ssemblies. Gear
are in extended position, nose gear doors open	45°, main gear o	loors vertical.
MODEL SCALE: 0.0405		3 3
DRAWING NUMBER: VL70-000140A		^ ,
DIMENSION: NOSE GEAR	FULL SCALE	MODEL SCALE
Number of wheels	2	2
Wheel axis: Fuselage station Waterline Wheel diameter, in. Wheel width, in:	374.74 221.51 32.00	15.177 8.971 1.296
Each wheel Centerline-to-centerline Main strut diameter, in. Side door, both sides:	8.80 22.0 7.72	0.356 0.891 0.312
Length, in. Width (follows body contour) Maximum thickness Fuselage station at center of leading edge	105.93 21.53 7.01 279.5	4.290 0.872 0.284 11.320
MAIN GEAR		
Number of wheels Wheel axis:	22	2 .
Fuselage station Waterline Wheel diameter, in.	1178.00 185.26 44.20	47.709 7.503 1.79
Wheel width, in: Each wheel Centerline-to-centerline Main strut diameter, in.	16.05 36.00 9.26	0.65 1.458 0.375
Buttplane of main strut centerline Side door: Length, in.	138.0	5.589 6.32
Width, in. Maximum thickness, in. Fuselage station at top of leading edge Centerline buttplane	68.64 7.90 1044.93 176.27	2.78 0.32 42.320 7.139

The state of the s

MODEL COMPONENT:OIS POD - M7		
GENERAL DESCRIPTION: Configuration 3A	.	
Model Scale :0405		
DRAWING NUMBER VL70-000140A VL70-000145		
DIMENSION:	FULL SCALE	MODEL SCALE
Length (OMS Fwd Sta Xo=1233.0) - IN.	327.000	13.24350
Max Width (0 Xo=1450.0) - IN.	94.5	3.82725
Max Depth (@ Xo=1493.0) - IN.	109.000	4.4145
Fineness Ratio		
Area		,
Max Cross-Sectional		
Planform '		
Wetted		
Base		•

1 1

MODEL COMPONENT: RUDDER - R5		
GENERAL DESCRIPTION: 2A, 3 and 3A Configurate	tion per Rockwell	Lines
Model Scale = .0405		
DRAWING NUMBER: VL70-00095		
DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area - FT ²	106.38	0.17449
Span (equivalent) - IN.	201.0	8.14050
Inb'd equivalent chord	91.585	3.70919
Outb'd equivalent chord	50.833	2.05874
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	0.400	0.400
At Outb'd equiv. chord	0.400	0.400
Sweep Back Angles, degrees	٠	•*;
Leading Edge	34.83	34.83
Tailing Edge	26.25	26.25
Hingeline	34.83	34.83
Area Moment (Normal to hinge line) - FT3 Product of Area and Mean Chord	526.13	0.03495

TABLE III. (Continued)

MODEL COMPONENT: VERTICAL - V s		·
GENERAL DESCRIPTION: Configuration 3.		**************************************
NOTE: Similar to V5 with radius or	n TE unjor cornor and IM low	er corner
where vertical meets fuselsc		
Model Scale = .0405		
	000146A 000146A	
DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA	•	
Area (Theo) Ft ² Planform Span (Theo) In Aspect Ratio Rate of Taper Taper Ratio Sweep Back Angles, degrees Leading Edge Trailing Edge 0.25 Element Line Chords: Root (Theo) WP Tip (Theo) WP MAC Fus. Sta. of .25 MAC W. P. of .25 MAC Airfoil Section	413.253 315.720 1.675 0.507 0.40399 45.00 25.947 41.130 268.500 108.470 199.60756 1463.50 635.522 0.00	0.67784 12.78666 1.675 0.507 0.40399 45.00 25.947 10.87425 4.39303 8.09221 59.27175 25.738b4 0.90
Leading Wedge Angle Deg Trailing Wedge Angle Deg Leading Edge Radius (!in) - Void Area Blanketed Area	- IN. - 10.00 14.920 - 2.00 13.17 - 0.00	10.00 14.920 9.0810 0.02160 0.00

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TABLE III. (Continued)

MODEL COMPONENT. HITHE H		
MODEL COMPONENT: WING-WIIG		
GENERAL DESCRIPTION: Configuration 4		· · · · · · · · · · · · · · · · · · ·
NOTE: Identical to W ₁₁₄ except airfoil thickness.	Dihedral anglo	is along
trailing edge of wing.		
Model Scale = .0405		
TEST NO.	DWG. NO. VL70-	000140B 000400
DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL PATA Area (Theo.) Ft ² Planform Span (Theo In. Aspect Ratio Rate of Taper Taper Ratio Dihedral Angle, degrees(at N _o =1506.623,Y _o = Incidence Angle, degrees 105, Z _o = 282.75) Aerodynamic Twist, degrees Sweep Back Angles, degrees Leading Edge Trailing Edge 0.25 Element Line Chords: Root (Theo) B.P.O.O. Tip, (Theo) B.P. MAC Fus. Sta. of .25 MAC W.P. of .25 MAC W.P. of .25 MAC B.L. of .25 MAC EXPOSED DATA Area (Ineo) Ft ² Span, (Theo) In. BP108 Aspect Ratio Taper Ratio Chords Root BP108 Tip 1.00 b MAC Fus. Sta. of .25 MAC W.P. of .25 MAC W.P. of .25 MAC Airfoil Section (Fackwell Mod NASA) XXXX-64 Root b = 0.425 Tip b = 1.00 Data for (1) of (2) Sides Leading Edge Cuff Planform Area (t ²)	2690.00 936.6816 2.265 1.177 0.200 3.500 0.500 +3.000 45.00 -10.056 35.209 689.2429 137.8486 474.3117 1126.721 291.00 187.33491 1812.2205 736.6816 2.058 0.2451 570.6230 137.8512 354.2376 1164.237 292.00 239.67786	4.41227 37.93560 2.265 1.177 0.200 3.500 0.500 +3.000 45.00 -10.036 35.209 27.91434 5.58287 19.22987 45.63220 11.78550 7.58706 2.97250 29.83560 2.058 0.2451 23.11023 5.58297 14.34662 47.15160 11.82600 9.70695
Planform Area Tt ² Leading Edge Intersects Fus M. L. 0 Sta Leading Edge Intersects Wing 0 Sta	118.333 505.0 1003.5	0.19409 20.45250 40.64175

TABLE III. (Concluded)

MODEL COMPONENT: Transition Grit	X ₉	
GENERAL DESCRIPTION:		
faces and .0054 in. nominal diame		
in. aft of nose		
DRAWING NUMBER:	page-service.	
DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length		-
Max. Width		
Max. Depth		-
Fineness Ratio		
Area		
Max. Cross-Sectional	***************************************	
Planform		
Wetted		
Base		

Table IV Pressure Bug Location

	I.D.	NO. 1	
TUBE NO.	FUS. STA.	ф	LOC.
1 2 3 4	235 245	ن ہی	F1 F2
5 6 7 8	245	90	F3
9	245	180	F159
	n	X/C	}
11 12	.25	0	NI
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	.75	0	N:3

NOTES:

- (1) I.D. NO. REFERS TO PRESSURE BUG CONFIGURATION (SEE TABLE II FOR RUN NUMBERS AND TEST CONDITIONS)
- (2) LOCATION NO. INDICATES COMPONENT ON WHICH A SPECIFIC BUG IS LOCATED:

F = FUSELAGE (LEFT SIDE UNLESS OTHERWISE NOTED)

W = WING

M = LEFT MAIN GEAR DOOR

N = LEFT NUSE GEAR DOOR

V = VERTICAL TAIL

I = INSIDE

O = OUTSIDE

L -- LEFT

R == RIGHT

т = тор

B - BOTTOM

(3) NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN

was a market and a market with the second of the second of

Table IV Pressure Bug Location

	I.D. N	0. 2		I.D.	NO. 3		1.0	. NO.	4
Tube No.	FUS. STA.	ø	LCC.	FUS. STA.	ø	LOC. NO.	FUS. STA.	ø	LOC.
1 2 3 4 5 6 7 8 9 10 11 23 14 5 16 17 18 19 20 1 22 23 24 25 26 27 28	265 1 265 1 265 275 275 775	0 20 40 55 70 90 120 150 180 X/C .05I .05Ø .05I	F4 F5 F6 F7 F8 F10 F11 NØ3 NI4 NØ4	295 1 295 1 295 .25 .75 .75	0 20 40 55 70 90 120 150 180 X/C .20I .20Ø .20I	F13 F14 F15 F16 F17 F18 F19 F20 F21 NI5 NØ5 NØ6	325 325 1 25 .25 .75 .75	20 40 55 70 90 120 150 180 301 .30Ø .30I	F22 F23 F24 F25 F26 F27 F28 F29 F30 NI7 NØ7 NI8 NØ8
29 30									

NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN NOTE:

Table IV
Pressure Bug Location

	I.D. N	0. 5		I.D.	NO.	5	I.D	. NO.	7
TUBE NO.	FUS. STA.	ø	LCC. NO.	FUS. STA.	φ	LCC. NO.	FUS. STA.	ø	LCC.
1 2 3 4 5 6 7 8 9 10 11 2 3 14 15 16 17 18 19 20 1 22 23 24 25 26 27 28 29 30	380 1 380 1 .25 .75 .75		F31 F32 F33 F34 F35 F36 F37 F38 F39 NI 9 NØ 9 NI 10 NØ 10	425 425 7 .25 .75 .75	C 20 40 55 70 90 120 150 180 X/C .70I .70Ø .70I	F40 F41 F42 F43 F44 F45 F46 F47 F48 NI 11 NØ 11 NØ 12	450 450 -1 .25 .25 .75 .75	.90ø .90I	F49 F50 NI 13 NØ 13 NI 14 NØ 14

NOTE: NO PRESSURES RECORDED ON TUBE NCC. NOT FILLED IN

Table IV Pressure Bug Location

	I.D. N	0. 8		I.D.	NO. 9		I.D. NO. 10			
TUBE NO.	FUS. STA.	φ	LOC.	FUS. STA.	ø	LOC. NO.		FUS. STA.	ø	LCC.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 20 20 20 20 20 20 20 20 20 20 20 20 20	475 475 175 .25 .25 .75	40 55 70 90 120 150 180 X/C	F51 F52 F54 F55 F56 F57 F58 F59 M 15 M 2	500 •25 •25 •50 •75 •75	.05Ø .05I	F60 MI 33 M Ø 4 5 M Ø 5		540 7 .25 .25 .50 .50 .75 .75	0 20 40 55 70 90 120 150 180 201 .200 .201 .200 .201	F61 F62 F63 F64 F65 F66 F69 MI 6 MØ 7 MØ 7 MØ 8

NOTE: NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN

Barrell a Warre

Table IV
Pressure Bug Location

	1.D. N	0. 11		I.D.	NO. 1	2		I.D	. NO.	13
TUBE NO.	FUS. STA.	ø	LCC.	FUS. STA.	d	LOC.		FUS. STA.	ø	LCC.
1 2	625	0	F 7 0	725	0	F77		880	0	F84
3	625	,4 0	F71	725	40	F78		880	40	F85
234567	625 A	70 90 120	F72 F73 F74	725 	70 90 120	F79 F80 F81		880	70 90 120	F86 F87 F88
8	♥ 625	150 180	F75 F76	♥ 725	150 180	F82 F83		000	150	F89
10			F 70			rey		880	180	F90
	η	x\c		η	::/c			η	X/C	
11 12 13	.25 .25 .50	.30I .30Ø .30I	MI 9 MØ 9 MI 10	.25 .25 .50	.50I .50Ø .50I	MI 12 MØ 12 MI 13		.25 .25 .50	.70I .70Ø .70I	мſ 15 мØ15 иI 16
14 15	.50 .75	.30ø .30I	MØ 10 MI 11	.50 .75	.50ø .50I	MØ 13 MI 14		.50 .75	.700 .701	MØ 16 MI 17
16 17	•75 •299	.30ø	MØ 11 HW 1	.75 .299	.50ø	MØ 14 RW 21		.75	.70ø .2221	MØ17
18 19	.2//	Ü	1	.299		RW 2B		.299	.222B	
20 21	.405	0	IW 7	.405	. 020T	IWl2T		.299 .405	-358B -052 T	IW17B
22				.405	.020B	LW12B		.405	.052B	IW18B
23 24	.534	0	IM 8	.534 .534		IW13T IW13B	5	.534 .534	.05 T	LW19T LW19B
25 26	.673	O	IW 9	.673 .673	.020T			.673	.05 T	LW2OT LW2OB
27 28	.780	0	IW10	.780 .780	.02 0 T			.780	.05 T	LW21T
29 30	.887	0	IW11	.887 .887	.020T			.887 .887	.05T .05 B	LW22T

NOTE: NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN

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Table IV Pressure Bug Location

	I.D. NO). 14			I.D.	NO.]	.5		I.D	. NO.	16
TURE NO.	FUS.	d	LCC. NO.		FUS. STA.	Þ	LOC. NO.		FUS. STA.	ø	LCC. NO.
1	980	0	F91		1080	0	F93		1180	0	F100
2 3	980	40	F92		1080	40	F94		1180	40	F101
3456789					1080	70 90 120 150 180	F95 F96 F97 F98 F99	ŧ	1180	70 90 120 150 180	F102 F103 F104 F105 F106
10	r;	X/S		10	η .158	X/C O	v 1		η	X/C	
11 12 13 14 15 16 17 18 19	.25 .25 .50 .50 .75 .75	.901 .909 .901 .909 .901 .909	MI 18 MØ 18 MI 19 MØ 19 MI 20 MØ 20 RW 4		.25 .316 .600 .840 .75 .925 .352 .352	1.00 0 0 0 1.00 0 .080T .0803	M 21 V 2 V 3 V 4 M 22 V 5 RW 5T RW 5B LW28T		.158 .316 .600 .840 .925 .352	.02L .02L .02 I .02 I .02 I	LV 9 LV 10 RW 6T
20 21 22 23 24 25 26 27 28 29	.405 .405 .534 .534 .673 .673 .780 .780	.1957 .1958 .15 T .15 B .15 T .15B .15 T	IW238 IW24T IW245 IW25T IW25E IW26T IW26E		.299 .534 .534 .673 .780 .780	.25 T .25B .25 S .25R .25T .25B	IW28B IW29T IW29B IW30T IW30B IW31T IW31B IW32T		.405 .405 .534 .534 .673 .673	.431T .431E .40T .40B .40T .40B	
27	.780	.15 T	IW261		.780	.25T	1 בינון 1 בינו				

NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN NOTE:

Table IV
Pressure Bug Location

	I.D. N	0. 17		I.D.	NO. 1	8	I.D	. NO.	19
TUBE No.	FUS. STA.	ø	LCC. NO.	FUS. STA.	ø	ICC. NO.	FUS. STA.	ø	LCC. NO.
1 2 3 4 5 6 7 8 9 10	1245	0 40 70 90 105 120 135 150 165 180	F107 F108 F109 F110 F111 F112 F113 F114 F115 F116	1300	0 40 70 90 105 120 135 150	F117 F118 F119 F120 F121 F122 F123 F124 F125	1375	0 40 70 90 105 120 135 150 165	F126 F127 F128 F129 F130 F131 F132 F133 F134
11 12 13 14 15 16 17	η .158 .316 .600 .840 .925	.05L .05L .05L .05L .05L	LV11 LV12 LV13 LV14 LV15	η .158 .316 .600 .840 .925	X/C .15L .15L .15L .15L .15L	LV16 LV17 LV18 LV19 LV20	.158 .316 .600 .840 .925	.30L .30L .30L .30L .30L	LV 21 LV 22 LV 23 LV 24 LV25
18 19 20 21 22 23 24 25 26 27 28	.299 .299 .405 .405 .534 .534 .673 .673 .780	.695T .695B .574T .574B .55 T .555T .55B .65T .653	IW378 IW38T IW38B IW39T IW39B IW40T IW40B IW41T IW41B	. 299 . 299 . 405 . 405 . 534 . 534 . 673 . 673 . 780 . 780	.831B .763T .763B .725T .725B .70T .70B .75T		.299 .299 .405 .405 .534 .673 .673	.864B .81 T .81 B .775T	LW50B LW51T LW51B LW52T
29 30	.887 .887	.60T .60B	1W42T 1W42B	.887 .887	.75 T .75 B	IW48T IW483			

NOTE: NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN

Table IV Pressure Bug Location

ſ	I.D. NO	. 20			I.D.	NO. 21			I.D.	NO.	22
TUBE NO.	FUS.	ø	LOC.		FUS. STA.	þ	LOJ. NO.		FUS. STA.	6	LOC.
1 2 3 4 5 6 7 8 9	1430	0 40 70 90 105 120	F135 F136 F137 F138 F139 F140 F141 F142 F143		1480	0 40 70 90 105 120 135 150 165	F144 F145 F146 F147 F148 F149 F150 F151 F152		1530 1530 1580 1580	110Ø 110I 120Ø 120I 0 40	F153 F154 F155 F156 F157 F158
10 11 12 13	η :158 :316 .600	X/C .52L .52L .52L	LV 26 LV 27 LV 28		.158 .316 .600	X/C .65L .65L	LV 31 LV 32 LV33 LV 34		.158 .316 .600 .840	.775L .775I .775I	LV 36 LV 37 LV 38 LV 39
14 15 16 17 18 19 20 21	.840 .925 .299 .299	.52L .52L .898 .898	B LW53!) 	.405 .405	.905	LV 35 LV 58T LW 58R LW 59T		.925 .299 .299 .405	.9661 .9661	LW61T HW61B HW62T
21 22 23 24 25 26 27 28	.405 .534 .534 .673 .673 .780	.858 .85 .85 .85 .85	B 1W54! T 1W55 B 1W55!	3 r B B B	.534	.90 F			.405 .534 .534 .673 .673 .780	.95 1 .95 1 .95 2 .958	3 IW63B 1 IW64T IW64B 1 IW65T
29 30					.887 .887	.90 (.90	IM601	3			

NOTE: NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN

Table IV Pressure Bug Location

				,	rressur				
	ı.b.	NO. 23		1.D. N	Q. 24		I.D. N	10. 25	
TUBE NO.			LOC. NO			LOC. NO.	η	x/c	LOC.
1 2							. 299 . 405	.831 T .763 T	IW43T IW44T
	FUS. STA.	φ		FUS. STA.	ø		FUS. STA.	φ	
3 4 5 6 7 8 9							1245	90 105 120 135 150 165 180	F 110 F 111 F 112 F 113 F 114 F 115 F 116
	η	X/C		η	X/C		η	X/C	
11 12 13 14 15 16	.158 .316 .600 .840 .925	0 0 0 0	V 1 V 2 V 3 V 4 V 5	.158 .316 .600 .840 .925	.02 L .02 L .02 L .02 L .02 L	LV 6 LV 7 LV 8 LV 9 LV 10	.158 .316 .600 .840 .925	.05 L .05 L .05 L .05 L	LV 11 LV 12 LV 13 LV 14 LV 15
17 18 19 20 21				.158 .316 .600 .840 .925	.02 R .02 R .02 R .02 R .02 R	RV 6 RV 7 RV 8 RV 9 RV 10	.158 .316 .600 .840 .925	.05 R .05 R .05 R .05 R .05 R	RV 11 RV 12 RV 13 RV 14 RV 15
22 23 24 25 26 27			,				FUS. STA. 1245	90 105 120 135 150 165	RF 1 RF 2 RF 3 RF 4 RF 5 RF 6
28 29 30							n .299 .405	X/C .831 T .763 T	RW 7T RW 8T

NOTE: NO PRESSURES RECORDED

ON TUBE NOS. NOT FILLED IN

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Table IV
Pressure Bug Location

Ī				1					
	IID. NO. 26			I.D. NC. 27			I.D. NO. 28		
TUBE NO.	η	x/c	LOC. NO.	η	x/ c	LOC. NO.	η	x/c	LC.
1 2 3	.299 .405	.864 T .810 T	IW49T IW50T	.299 .405	.898 T .858 T	IW53 T IW54T	.299 .405	.966 T .905 T	IW61 T IW58T
-	FUS. STA.	ф		FUS. STA.	φ		FUS. STA.	φ	
4 5 6 7 8 9	1300	90 105 120 135 150 165	F120 F121 F122 F123 F124 F125	1375	90 105 120 135 150 165	F 129 F 130 F 131 F 132 F 133 F 134	1430	90 105 120 135 150 165	F 138 F 139 F 140 F 141 F 142 F 143
10	η	X/C		η	X/C		η	X/C	
11 12 13 14 15	.158 .316 .600 .840 .925	.15 L .15 L .15 L .15 L	LV 16 LV 17 LV 18 LV 19 LV 20	.158 .316 .600 .840 .925	.30 L .30 L .30 L .30 L .30 L	LV 21 LV 22 LV 23 LV 24 LV 25	.158 .316 .600 .840 .925	.52 L .52 L .52 L .52 L .52 L	LV 26 LV 27 LV 28 LV 29 LV 30
16 17 18 19 20 21	.158 .316 .600 .840	.15 R .15 R .15 R .15 R .15 R	RV 16 RV 17 RV 18 RV 19 RV 20	.158 .316 .600 .840 .925	.30 R .30 R .30 R .30 R	RV 21 RV 22 RV 23 RV 24 RV 25	.158 .316 .600 .840 .925	.52 R .52 R .52 R .52 R .52 R	RV 26 RV 27 RV 28 RV 29 RV 30
	FUS STA.	φ		FUS. STA.	ф		FUS. STA.	φ	
22 23 24 25 26 27	1300	90 105 120 135 150 165	RF 7 RF 3 RF 9 RF 10 HF 11 RF 12	1375	90 105 120 135 150 165 X/C	AF 13 RF 14 RF 15 RF 16 RF 17 RF 18	1430 1430	90 105 120 135 150 165	RF 19 RF 20 RF 21 RF 22 RF 23 RF 24
28 29 30	.299 .405	.864 T .810 T	RW 9T RW 10T	.299	.898 T .854 T	HW 11T HW 12 T	.299	.966 T .905 T	HW 13T HW 14T

NOTE: NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN

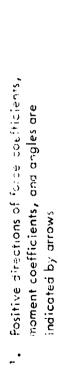
Table IV
Pressure Bug Location

	I.D. NO.	29		I.D. NO. 30			
TUBE NO.	η	X/C	LOC.	η	x/c	LOC.	
2	.405	.952 Т	IW 62T				
	FUS. STA.	φ		FUS. STA.	φ		
1 2 3 4 5 6 7 8 9	1480	90 105 120 135 150 165	F 147 F 148 F 149 F 150 F 151 F 152	1530 1530 1580 1580	110 Ø 110 I 120 Ø 120 I 0 40	F 153 F 154 F 155 F 156 F 157 F 158	
11	η	X/C		η	x/c	1	
11 12 13 14 15 16	.158 .316 .600 .840 .925	.65 L .65 L .65 L .65 L	LV 31 LV 32 LV 33 LV 34 LV 35	.158 .316 .600 .840 .925	.775 L .775 L .775 L .775 L .775 L	LV 36 LV 37 LV 38 LV 39 LV 40	
17 18 19 20 21	.158 .316 .600 .840 .925	.65 R .65 R .65 R .65 R	RV 31 RV 32 RV 33 RV 34 RV 35	.158 .316 .600 .840 .925	.775 R .775 R .775 R .775 R .775 R	RV 36 RV 37 RV 38 RV 39 RV 40	
	FUS. STA.	φ		FUS. STA.	φ		
22 23 24 25 26 27	1480	90 105 120 135 150 165	RF 25 RF 26 RF 27 RF 28 RF 29 RF 30	1530 ‡ 1530	110 Ø 110 I 120 Ø 120 I	RF 31 RF 32 RF 33 RF 34	
	n	X/C		η	x/c	[
29	.405	.952 T	RW 15T				

NOTE: NO PRESSURES RECORDED ON TUBE NOS. NOT FILLED IN.

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 For clarity, origins of wind and stability axes have been displaced from the center

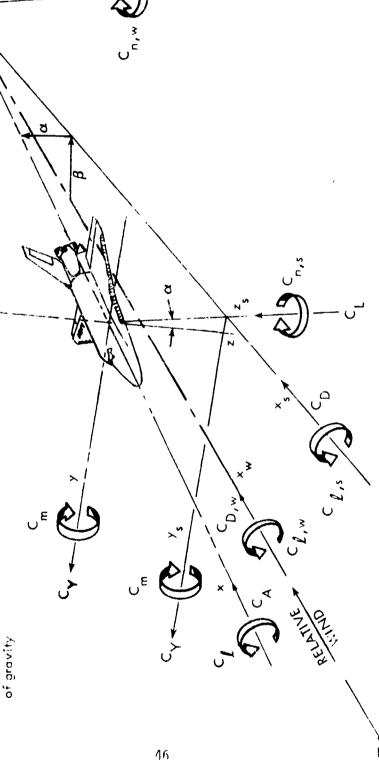
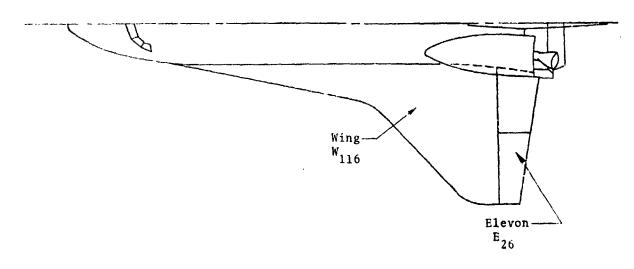
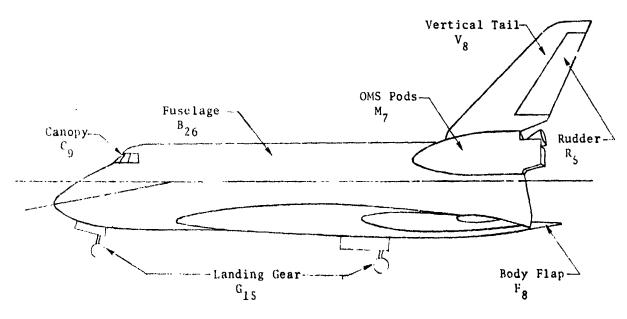


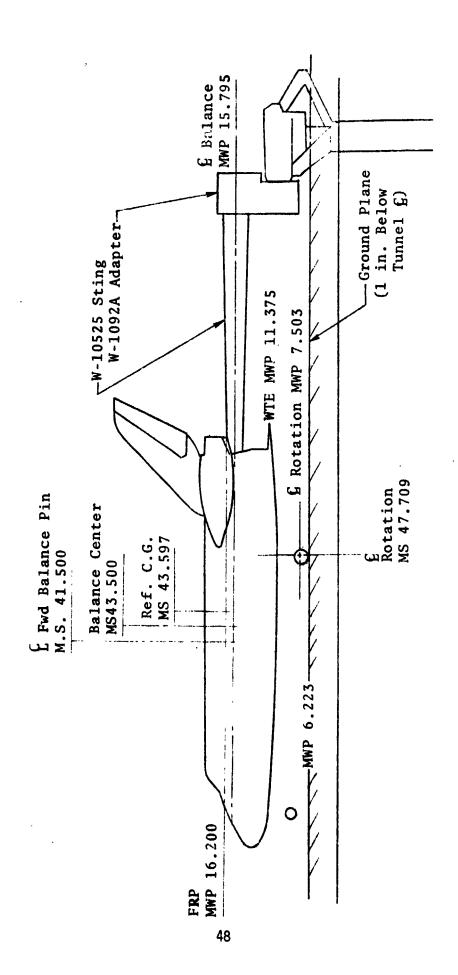
Figure 1. Axis Systems

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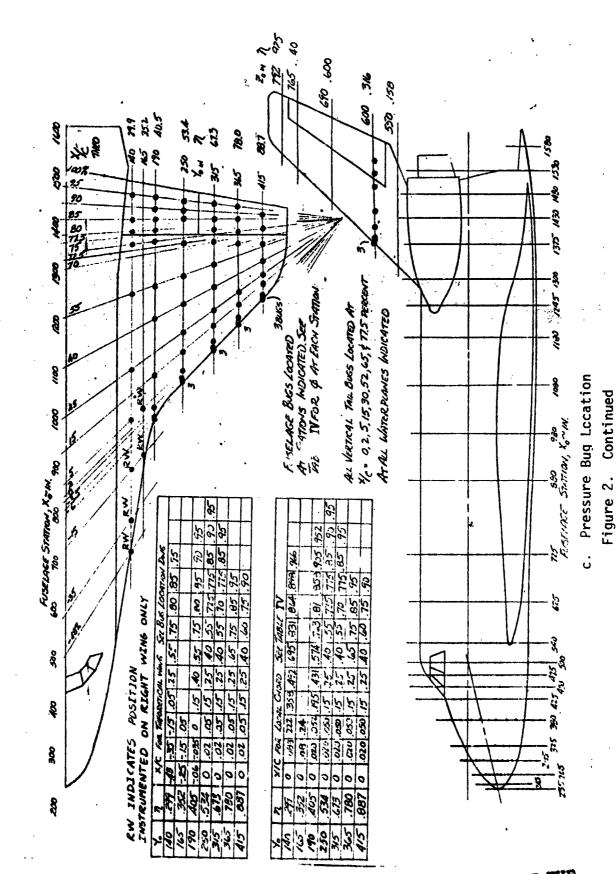


a. Model General Arrangement Figure 2. Model Sketches

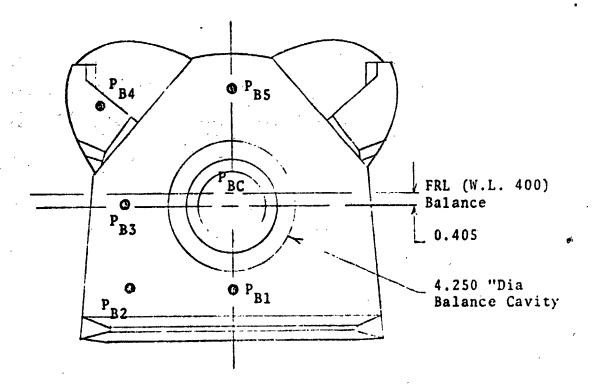


b. Model Installation Figure 2. Continued

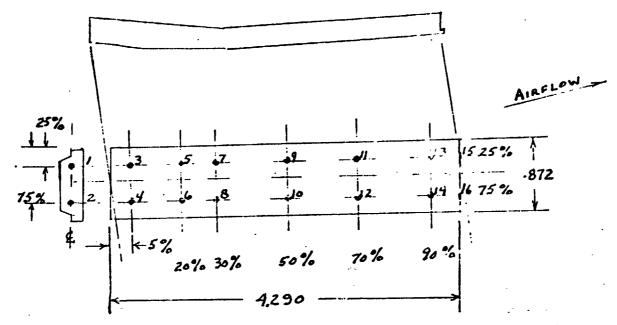
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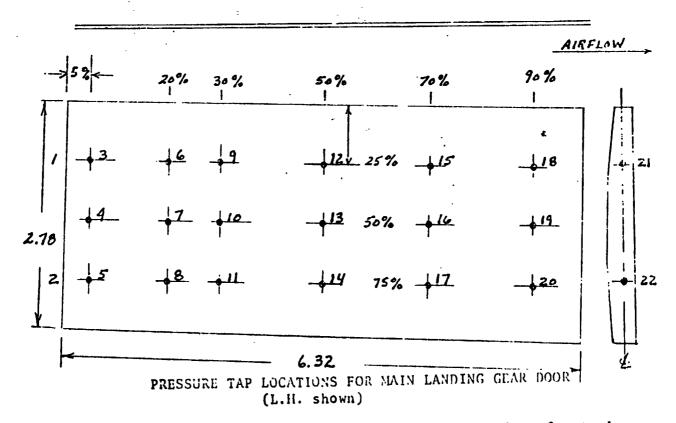
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d. Model Base - View Fwd. Figure 2 Continued



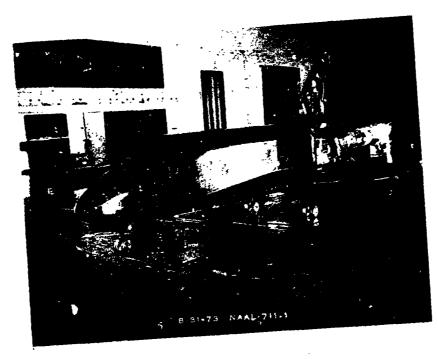
PRESSURE TAP LOCATIONS FOR MOSE LANDING GEAR DOOR (L.H. shown)



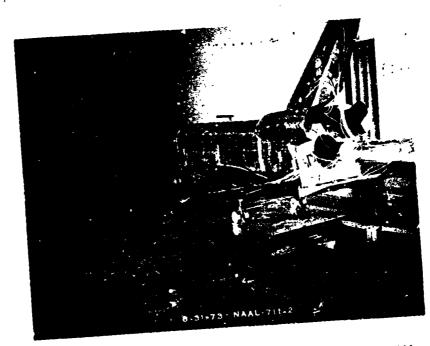
NOTES Taps shown on aft end of door; taps required on front also.

Taps shown on outside; taps required in inner side also.

e. Landing Gear Door Pressure Tap Locations Figure 2 Concluded



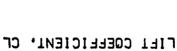
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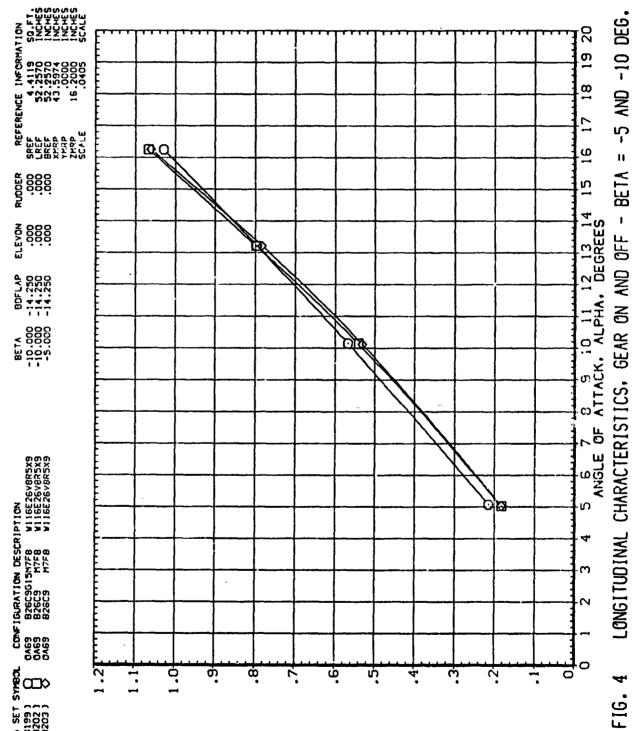


BASIC CONFIGURATION B 26 C 9 E 26 F 8 G 15 M 7 R 5 V 8 W 116 X 9

Figure 3. Model Installation Photographs

DATA FIGURES



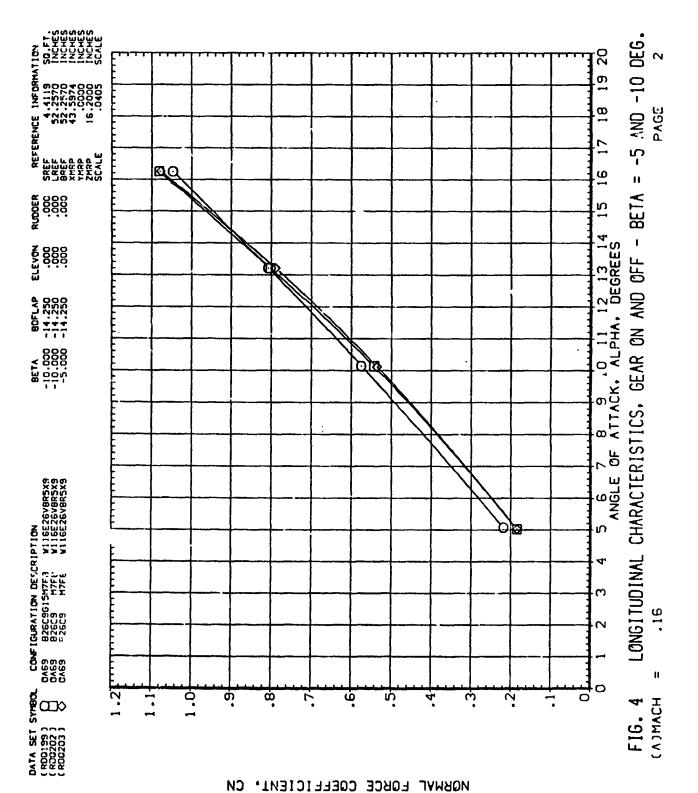


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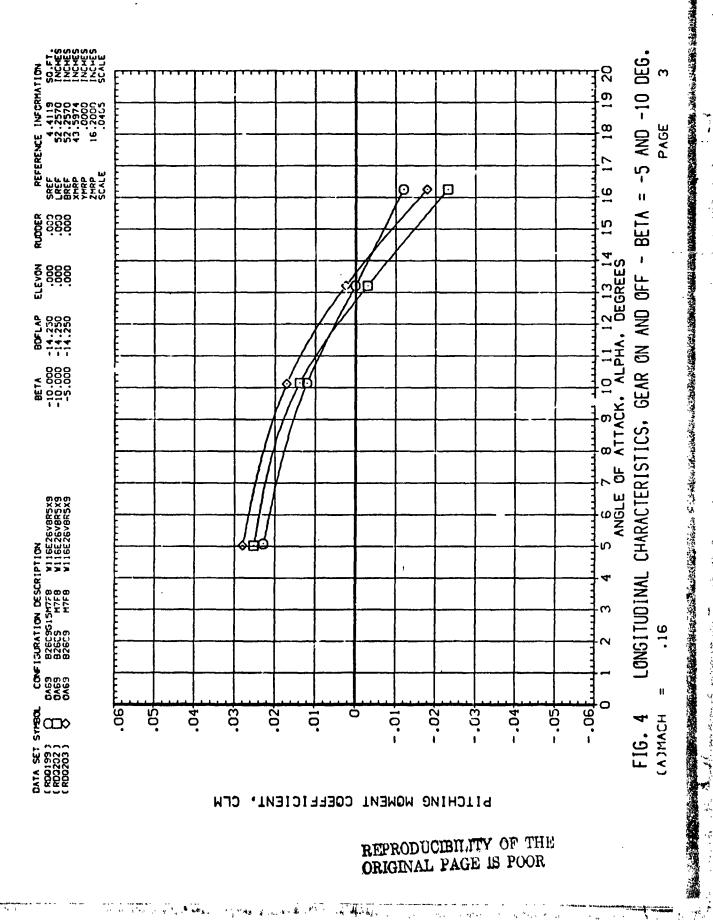
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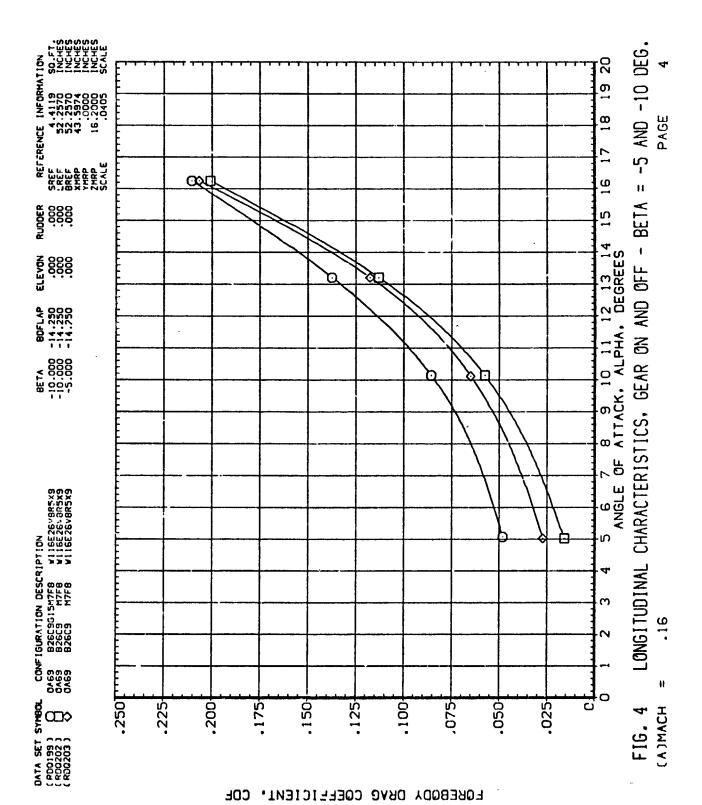
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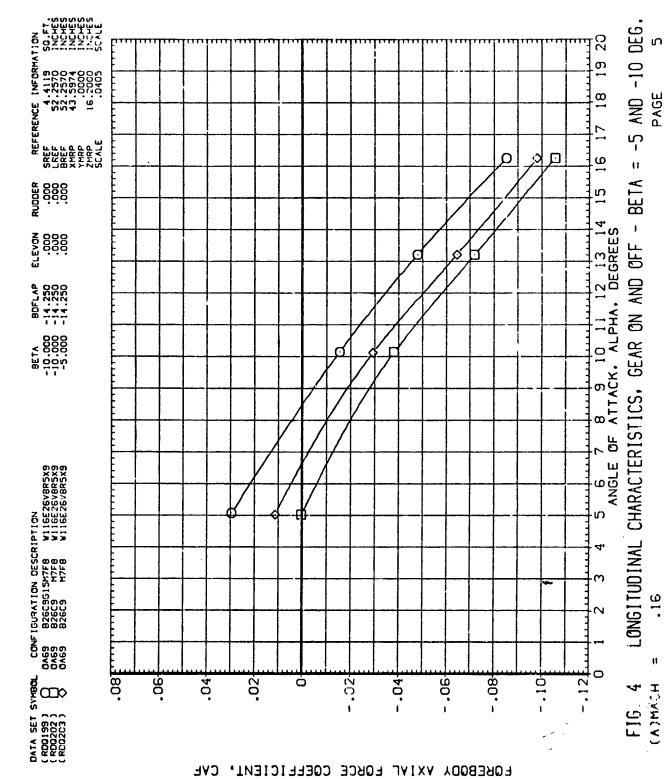


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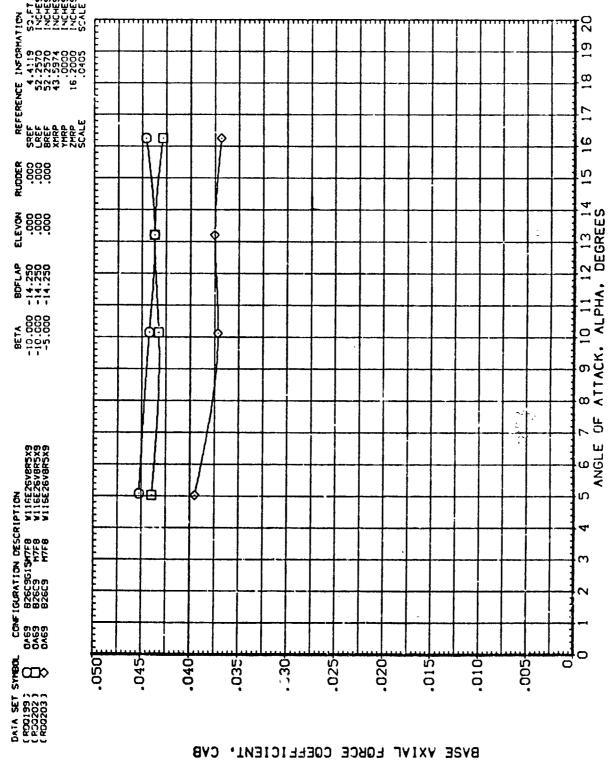
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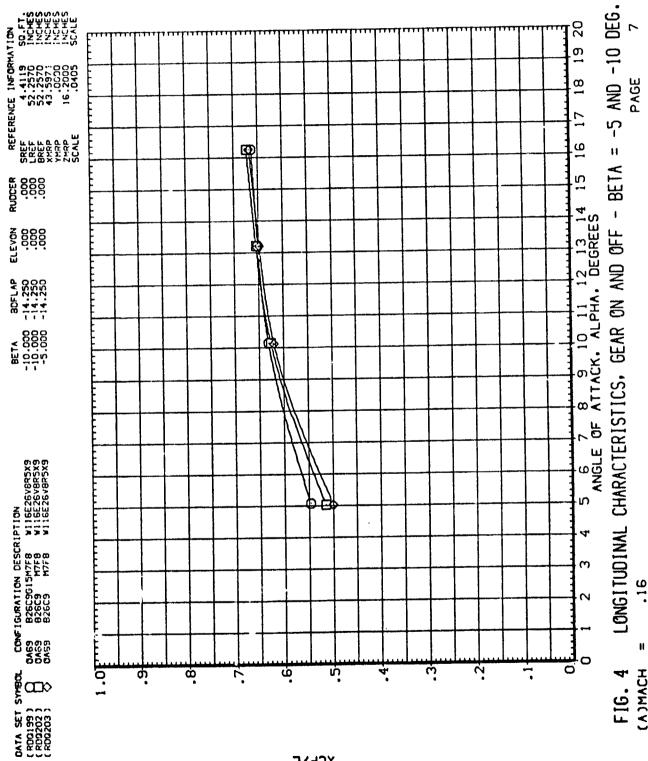
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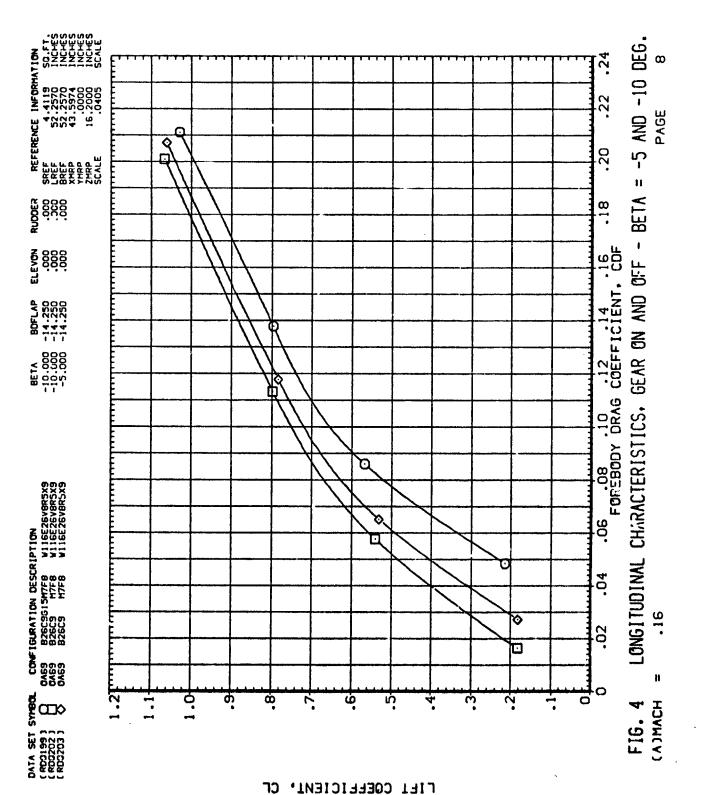
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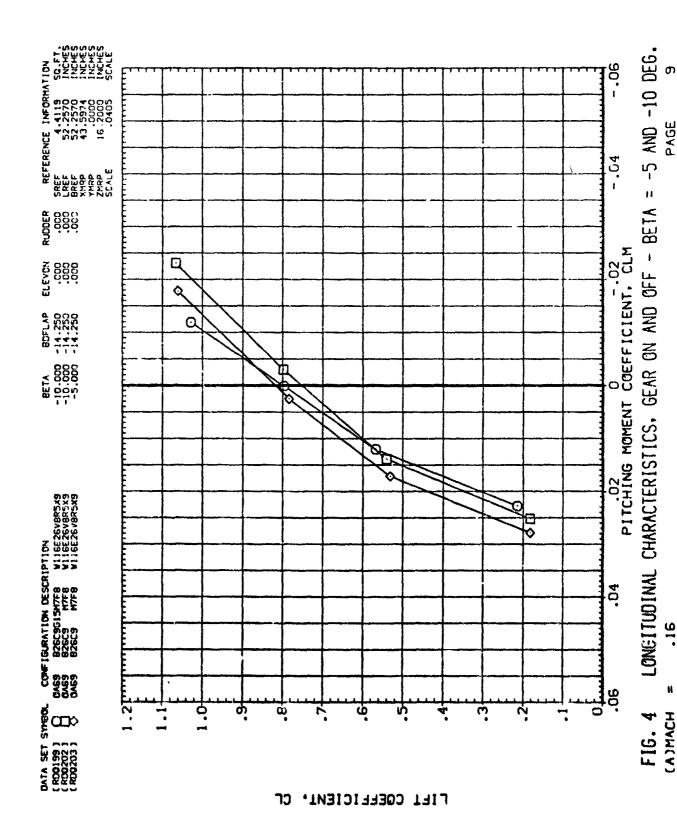
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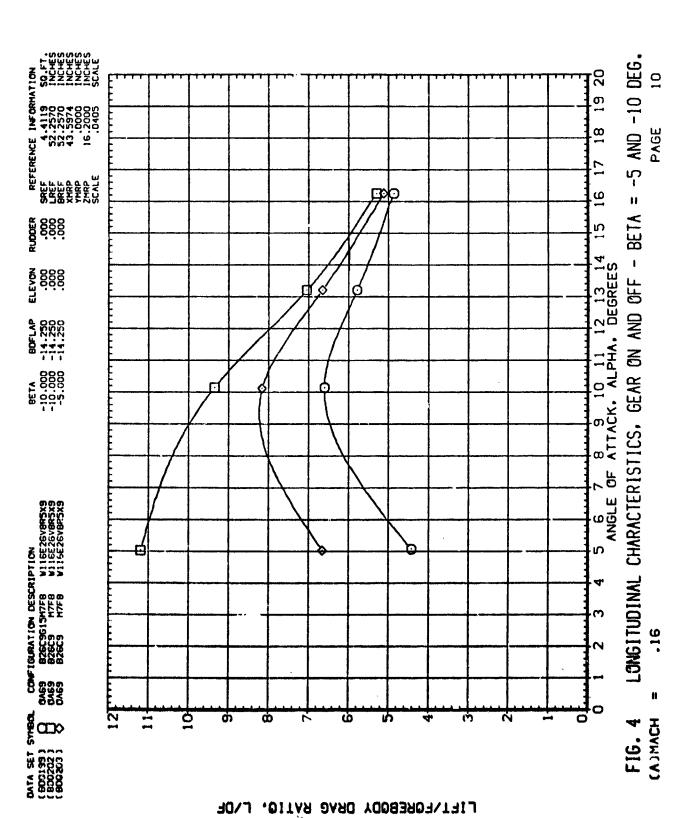
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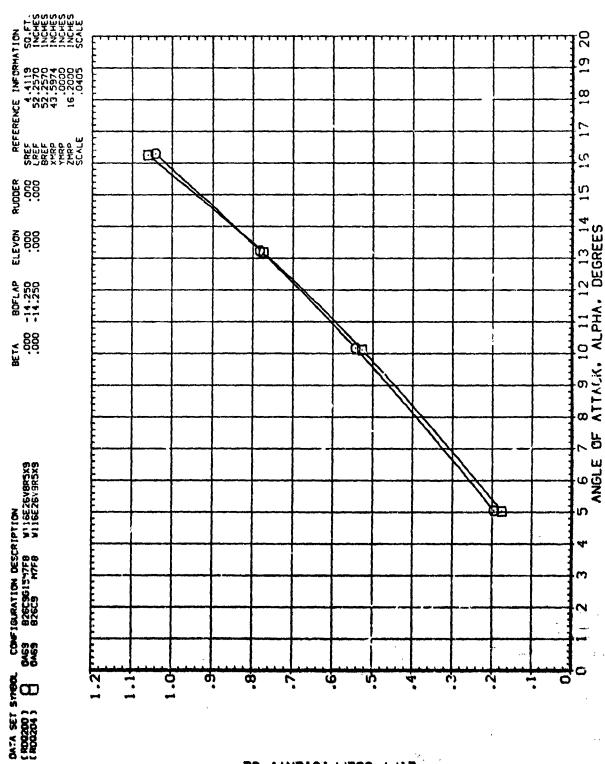
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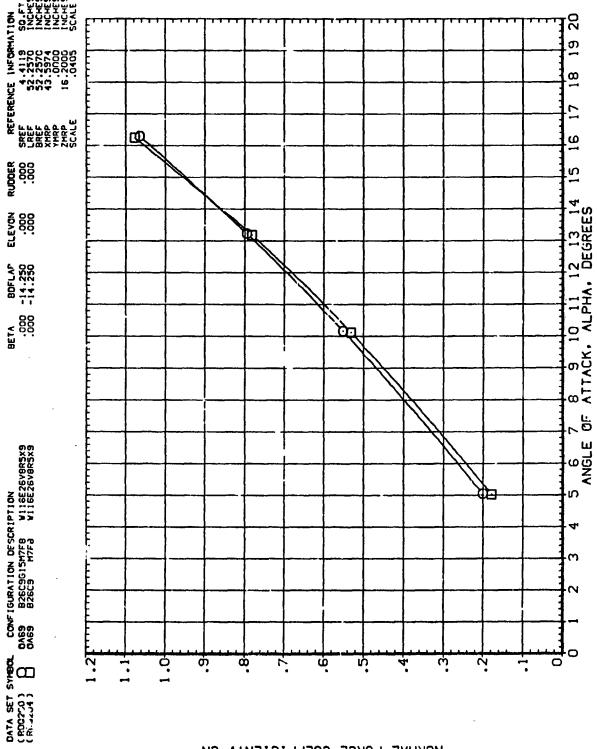


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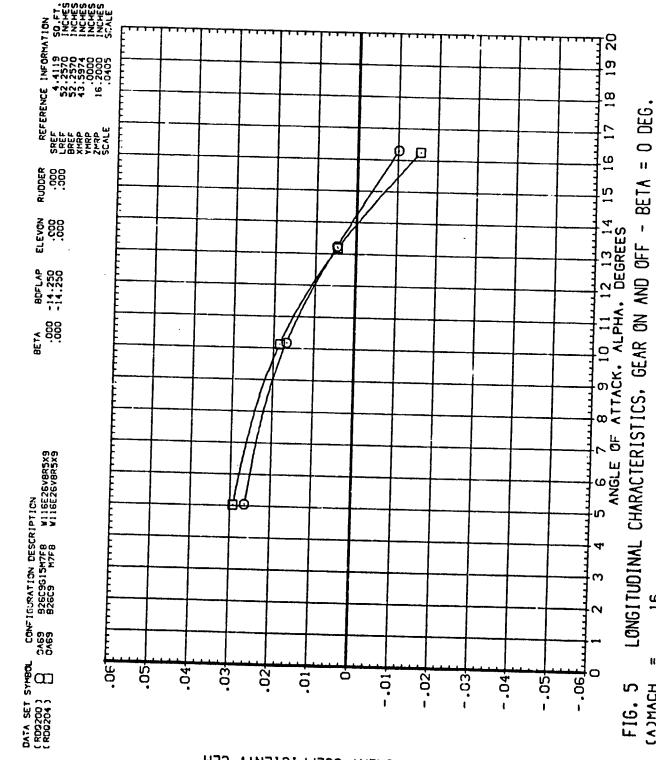
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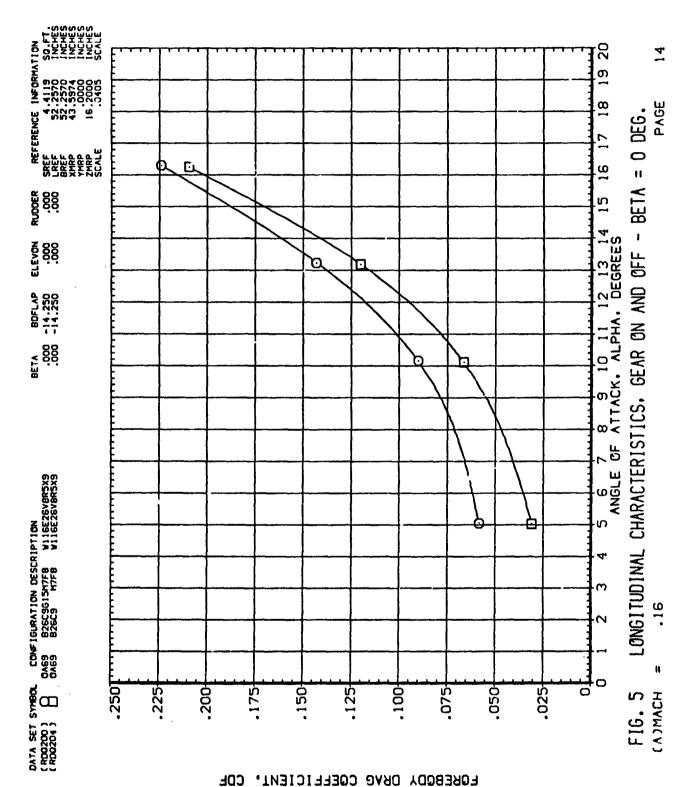
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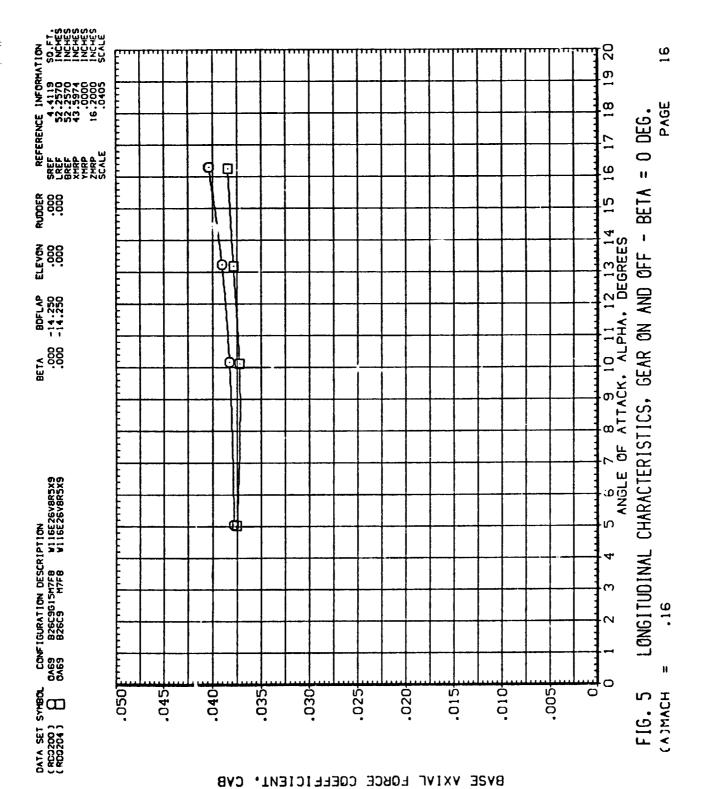
PAGE LONGITUDINAL CHARACTERISTICS, GEAR ON AND OFF - BETA = 0 DEG. 6 7 8 9 10 11 12 13 14 15 16 ANGLE OF ATTACK, ALPHA, DEGREES (A)MACH FIG. 5

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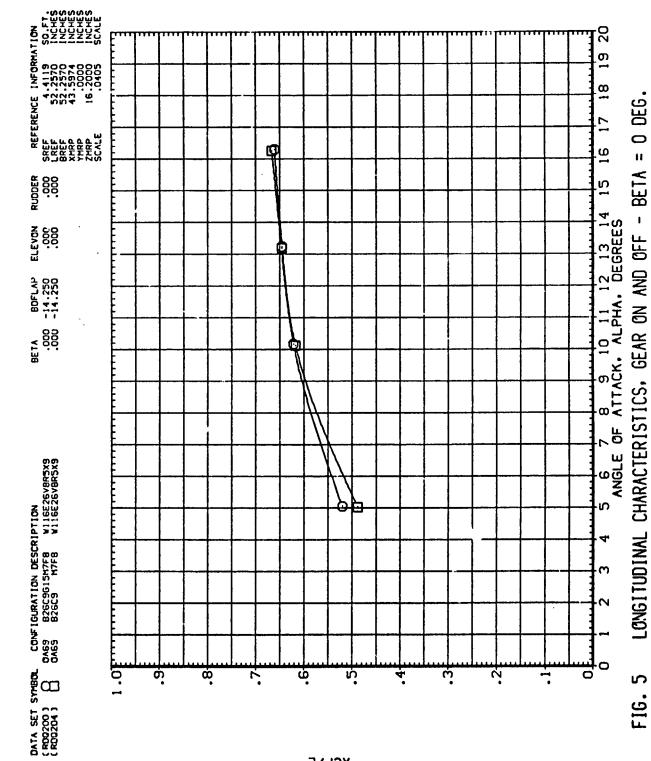
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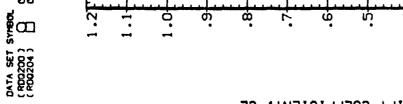


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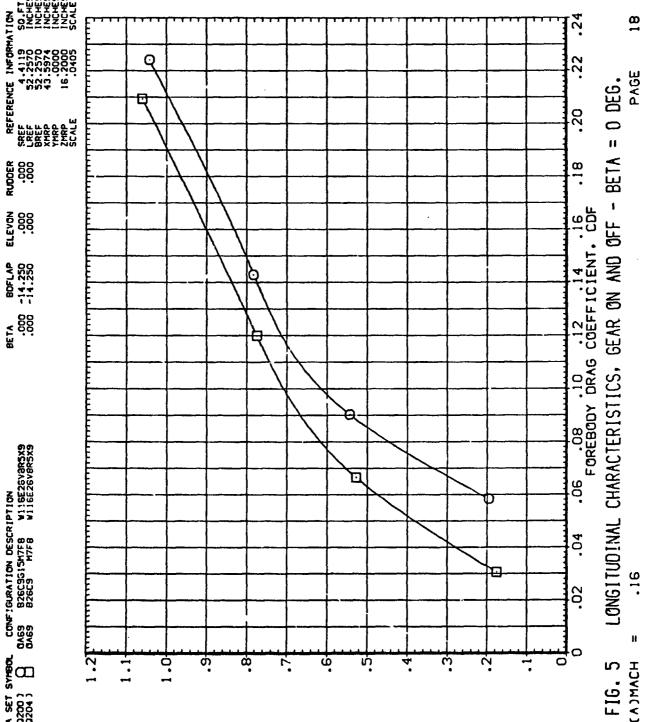
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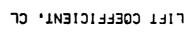


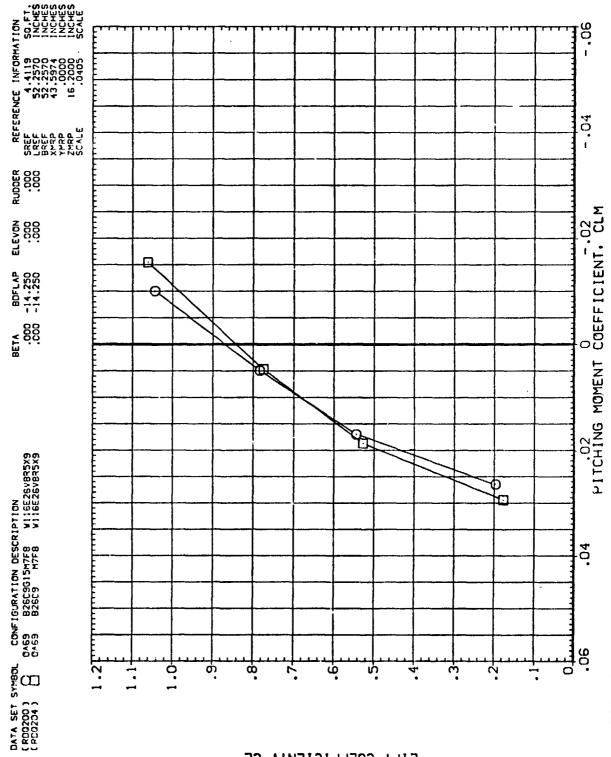
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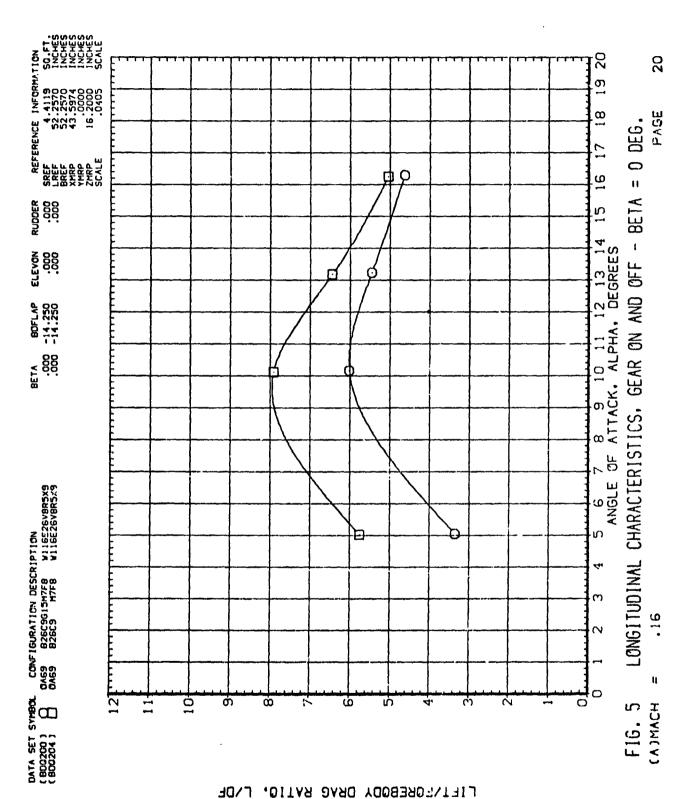


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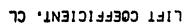
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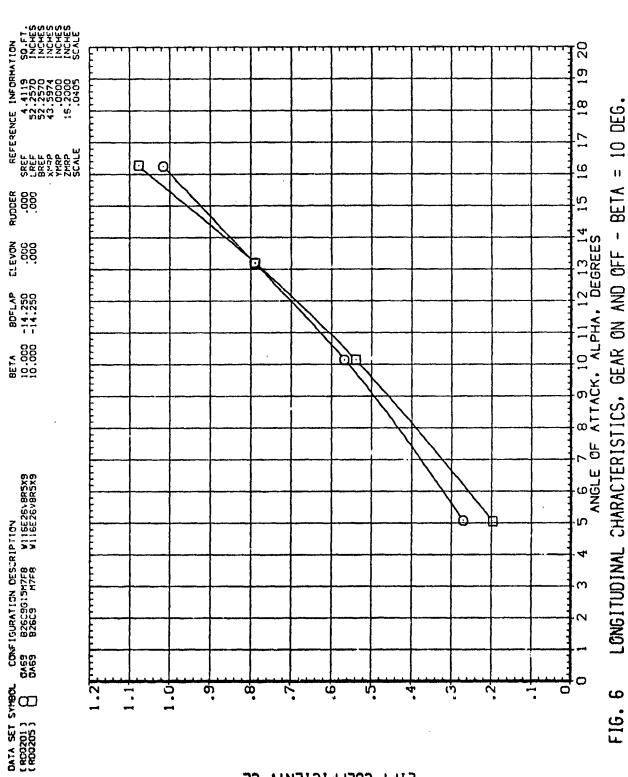


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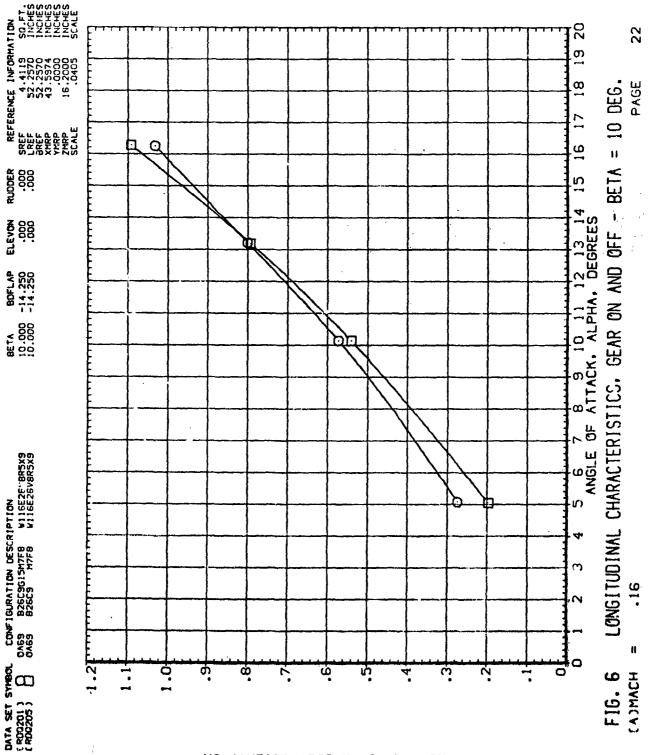


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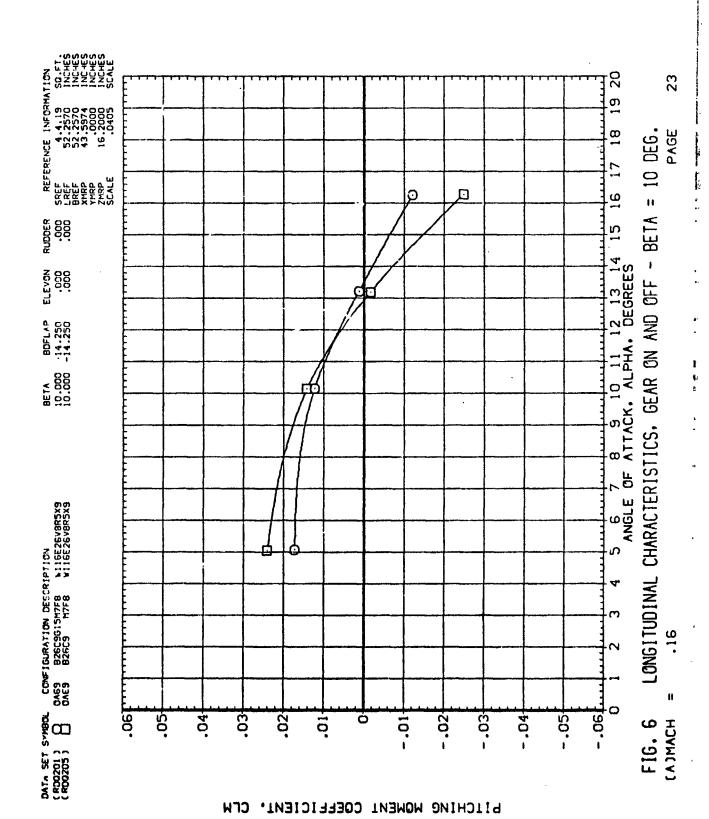
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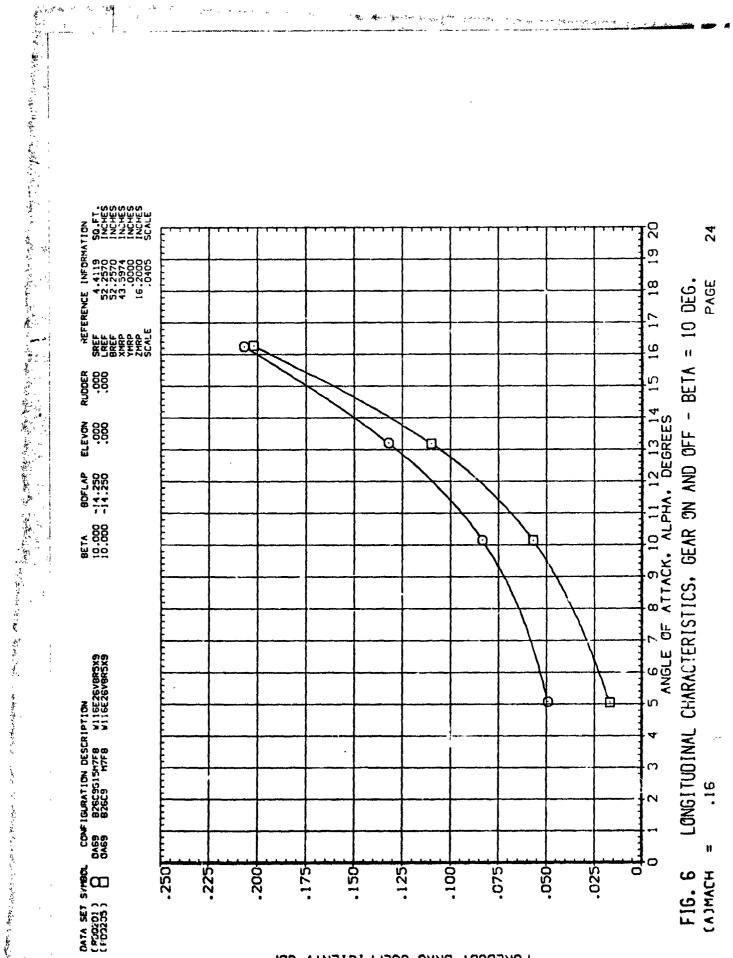
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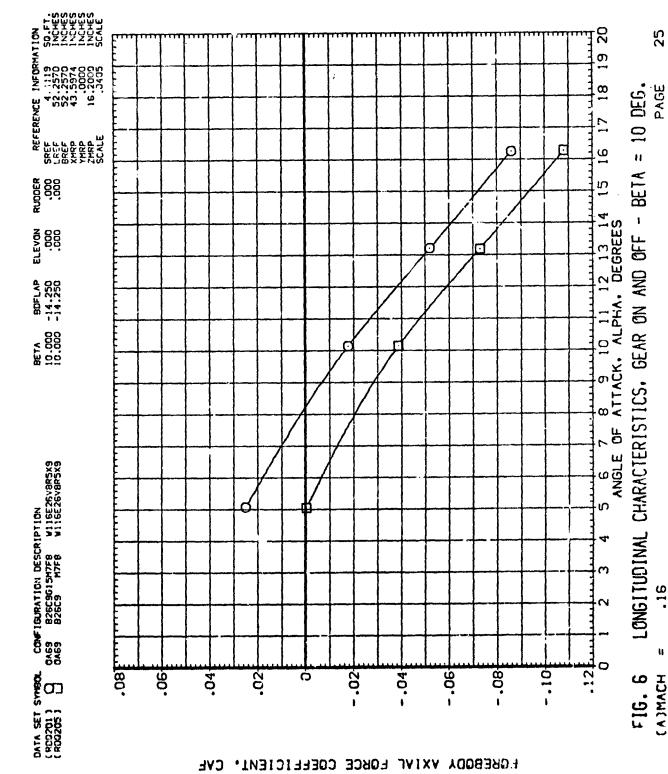
京の一下を書けているのからにはいかいことを見るであるとなっているとなっているというでは、あれていていた。



FOREBOOY DRAG COEFFICIENT,

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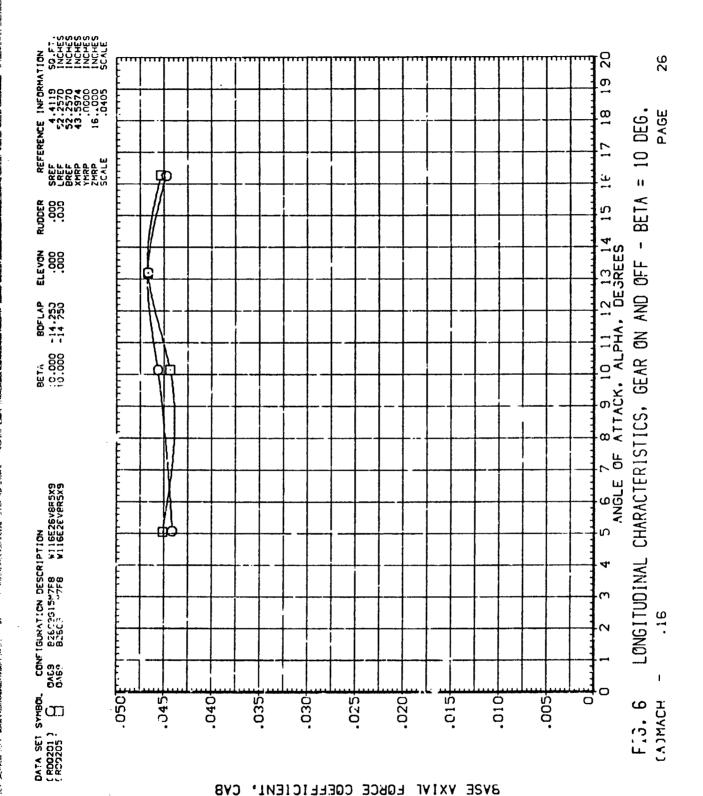


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こうべきのなるといいというとなるとなるとなっていますがない

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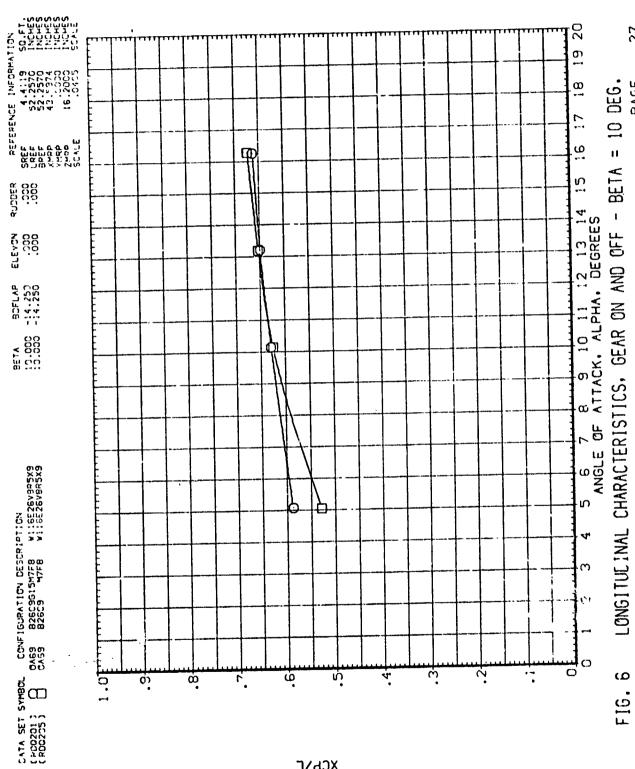
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日本年年 コティーカンサル

いとうないとくなっとするとのができていますというのであるとうまでいるからできないのできませんといま

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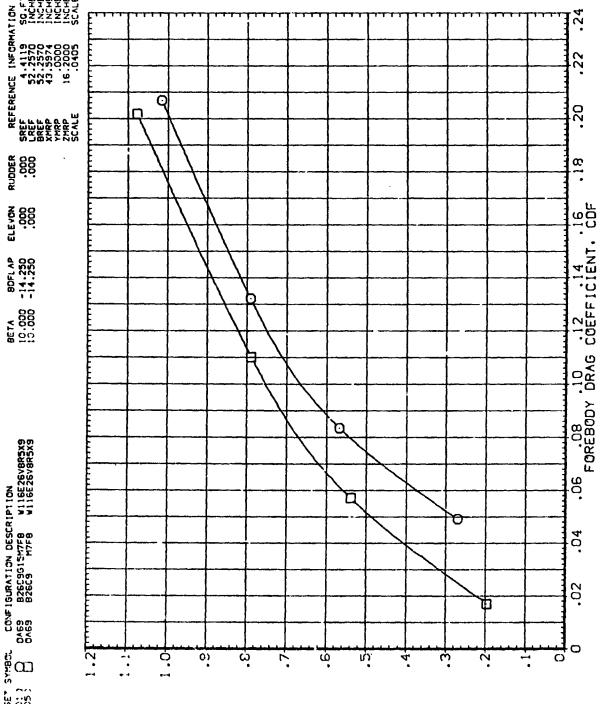
一般のとうないとは、魔になるとは、からはあるないなど、は、これには、いかないのでは、なないのは、ななないないないないないないないないないないできないないできません。

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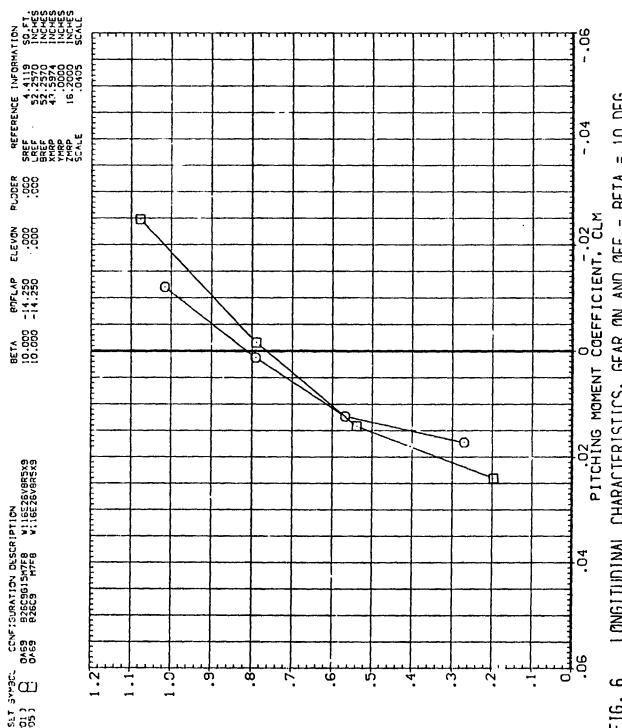
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- The Control of the

LONGITUDINAL CHARACTERISTICS, GEAR ON AND OFF - BETA = 10 DEG. F16. 6 (A) MACH

LIFT COEFFICIENT, CL

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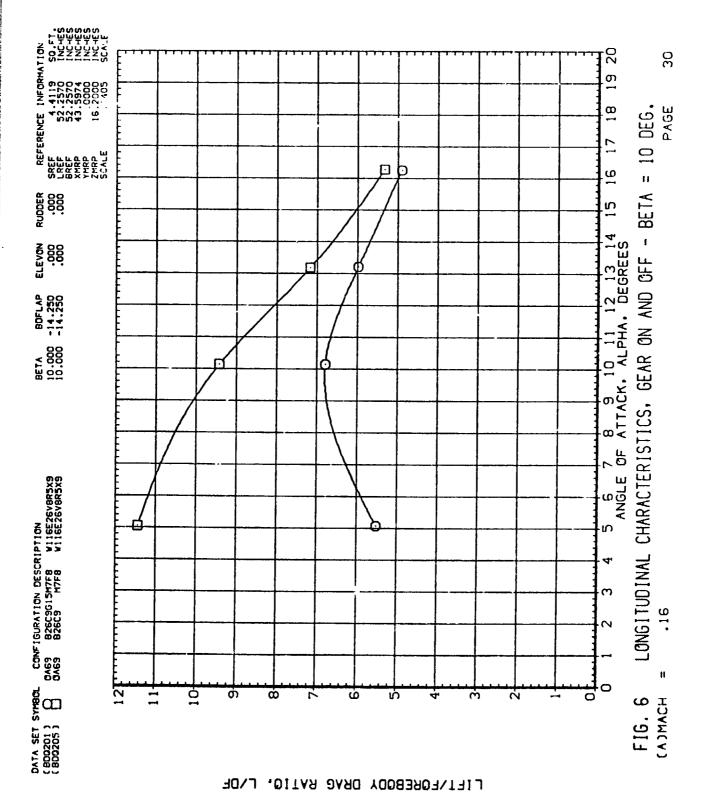
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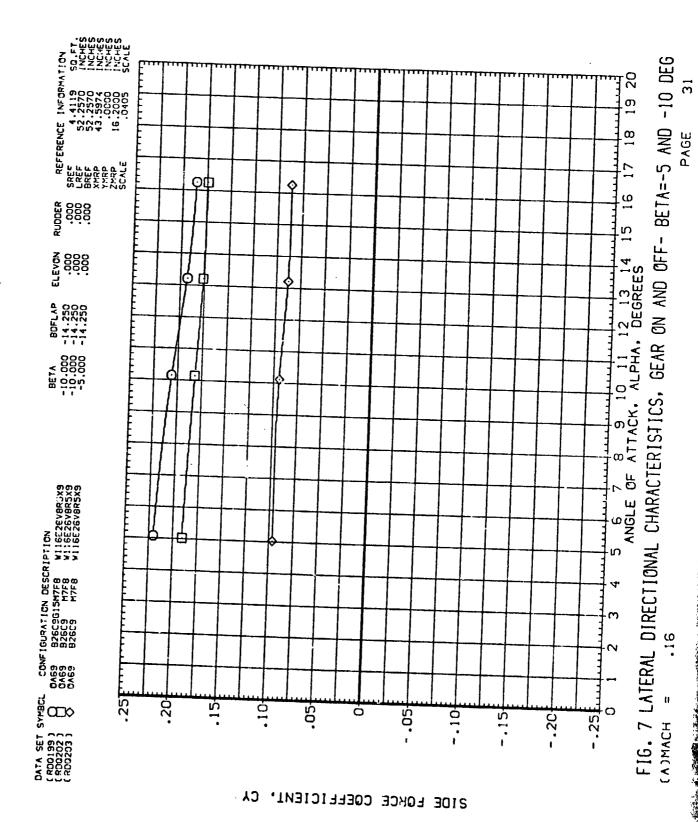
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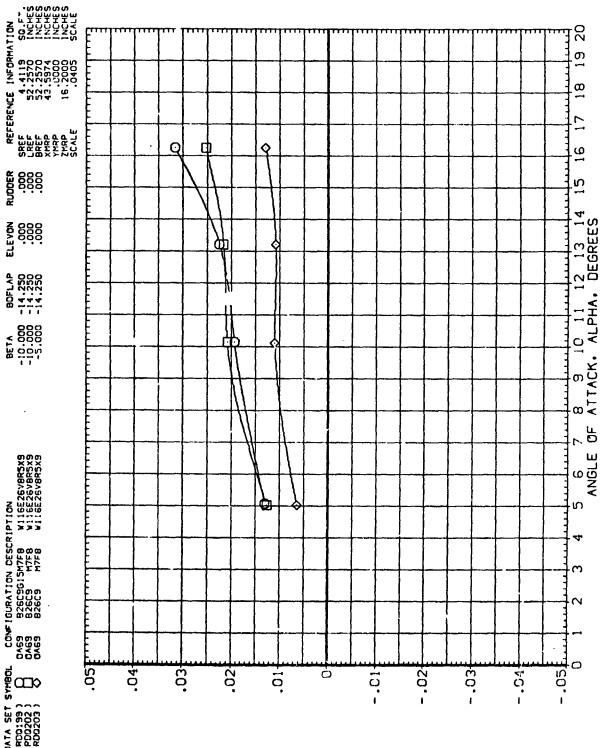
"all arms

LONGITUDINAL CHARACTERISTICS, GEAR ON AND OFF - BETA = 10 DEG. F16.6 (A)MACH





これ、大きななちのからない、おきとなれないとう、なないない



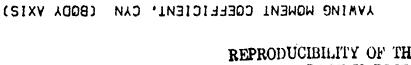
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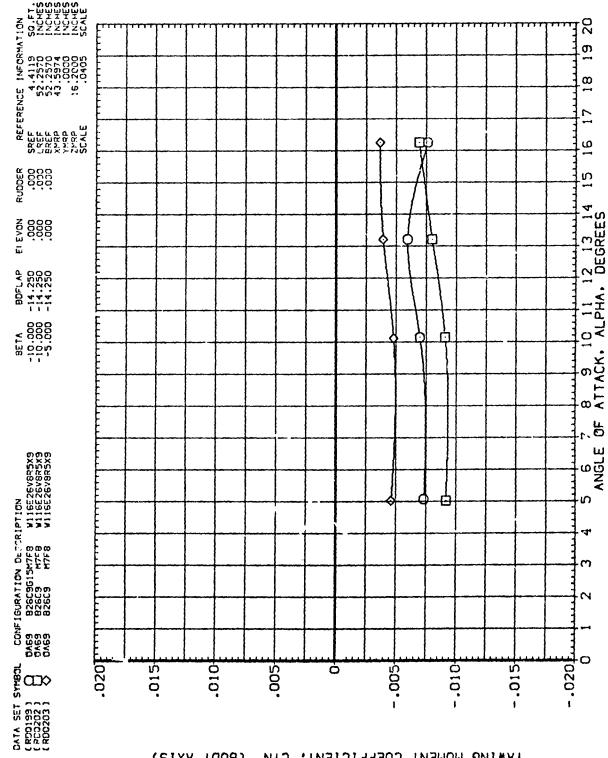
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FIG. 7 LATERAL DIRECTIONAL CHARACTERISTICS, GEAR ON AND OFF- BETA=-5 AND -10 DEG A)MACH = .16 (A)MACH



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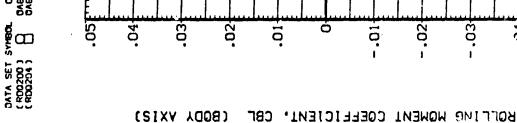
(A)MACH =

FIG. 7 LATERAL DIRECTIONAL CHARACTERISTICS, GEAR ON AND OFF- BETA=-5 AND -10 DEG

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SIDE FORCE COEFFICIENT,

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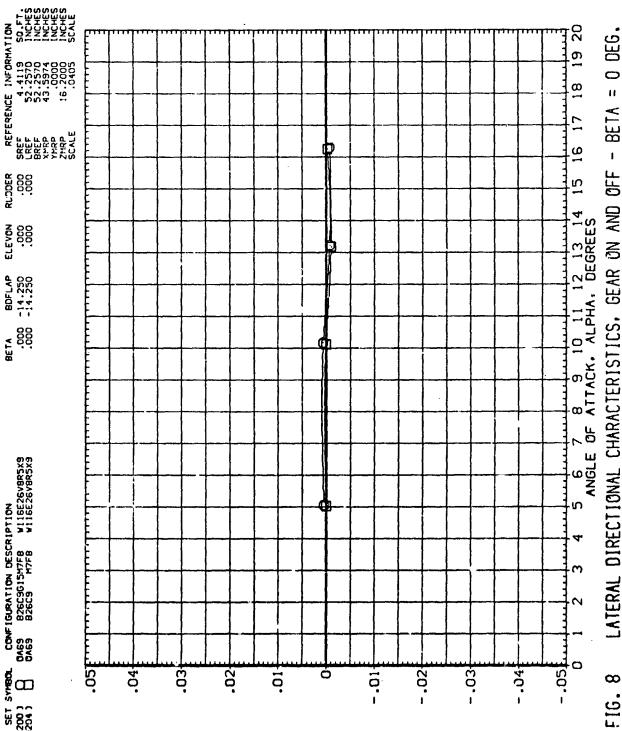


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P. 19



(A)MACH

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PAGE

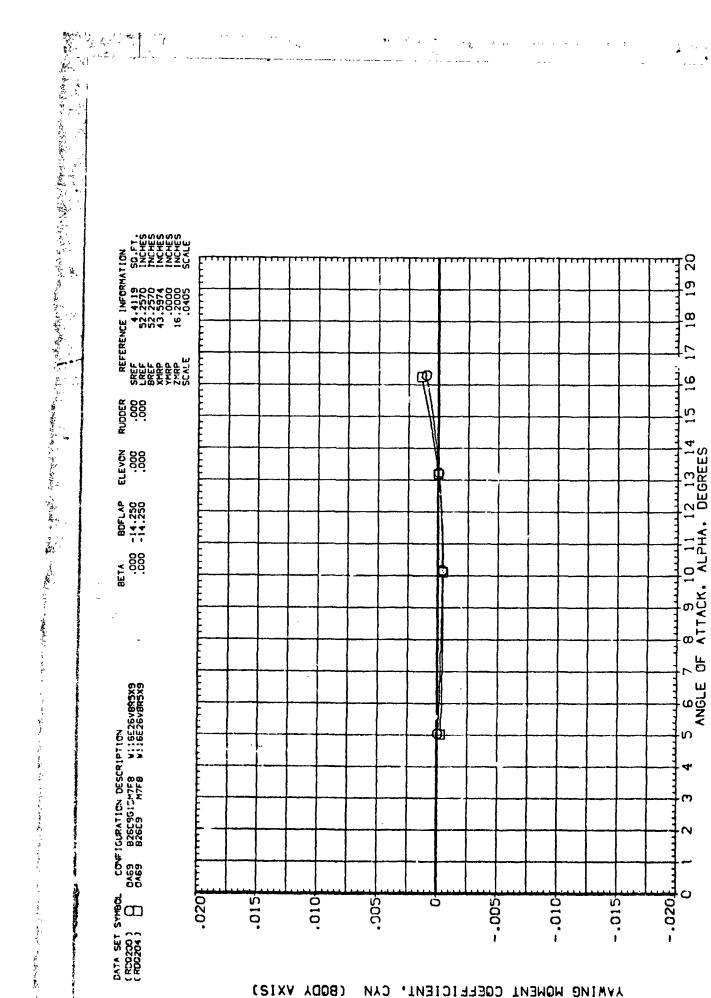
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William Control

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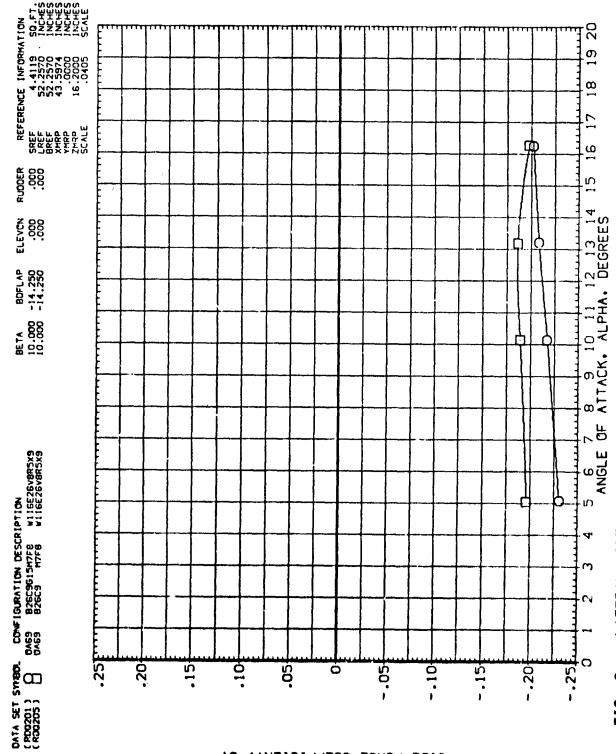
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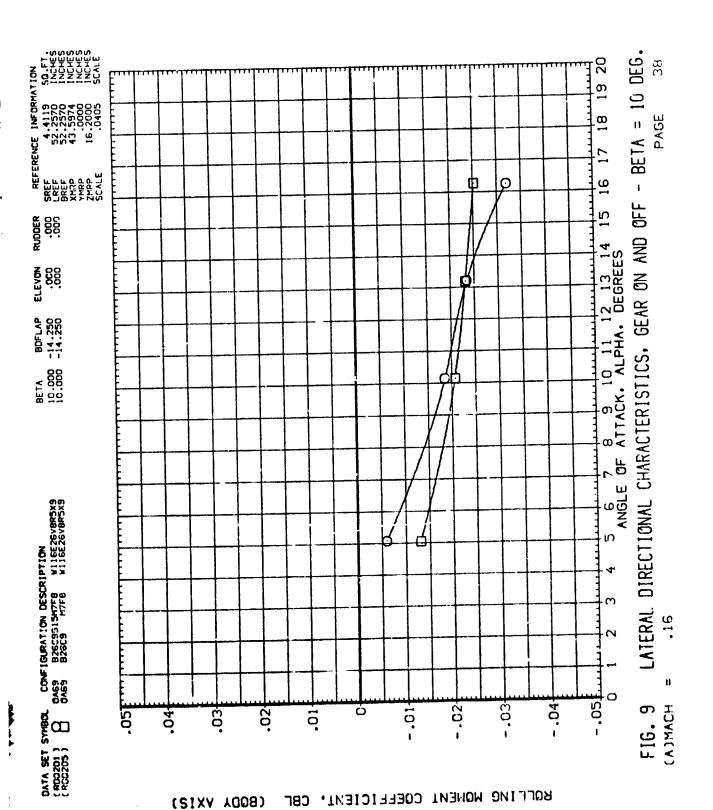


BETA = 0 DEG. 1 LATERAL DIRECTIONAL CHARACTERISTICS, GEAR ON AND OFF FIG. 8 (A) MACH

" 1.71



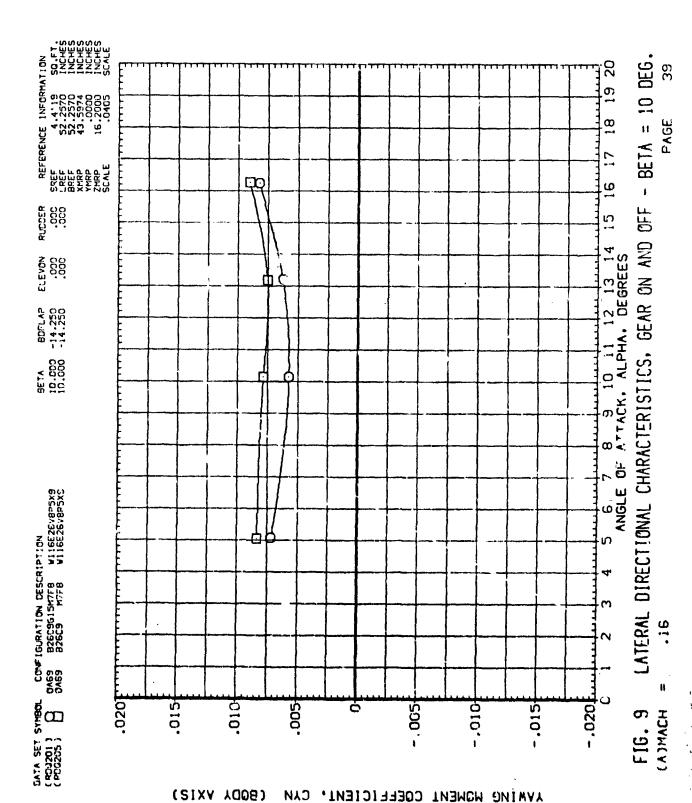
BETA = 10 DEG. LATERAL DIRECTIONAL CHARACTERISTICS. GEAR ON AND OFF -FIG. 9 (A)MACH THE REPORT OF THE PERSON OF TH



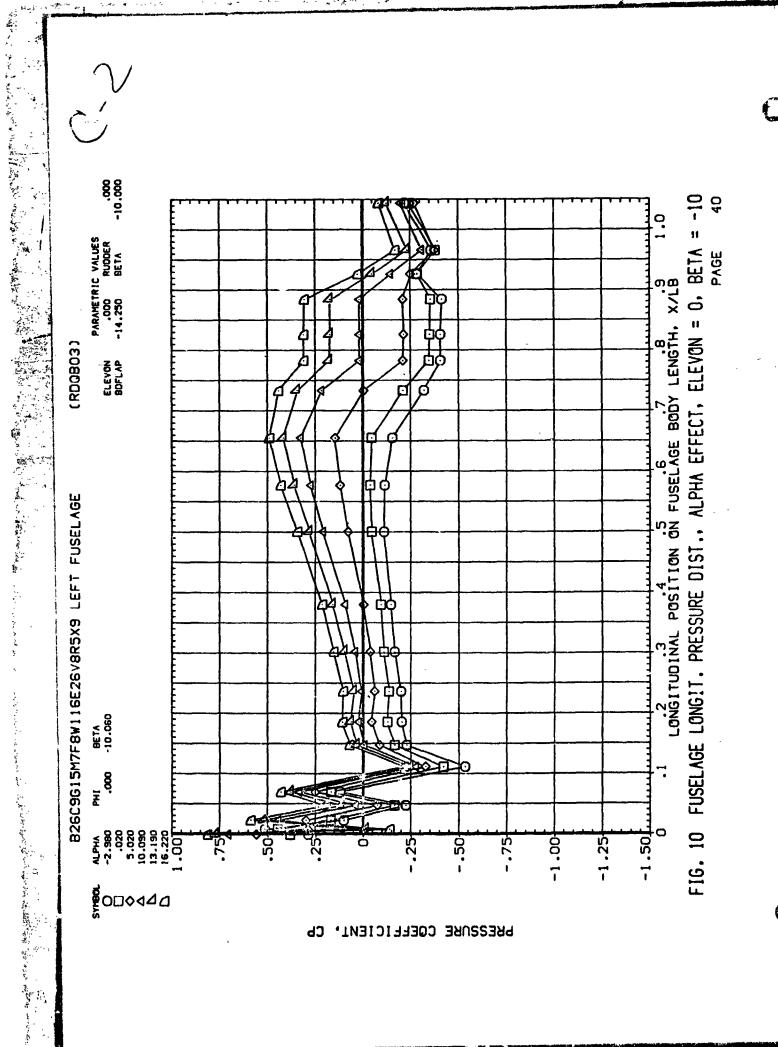
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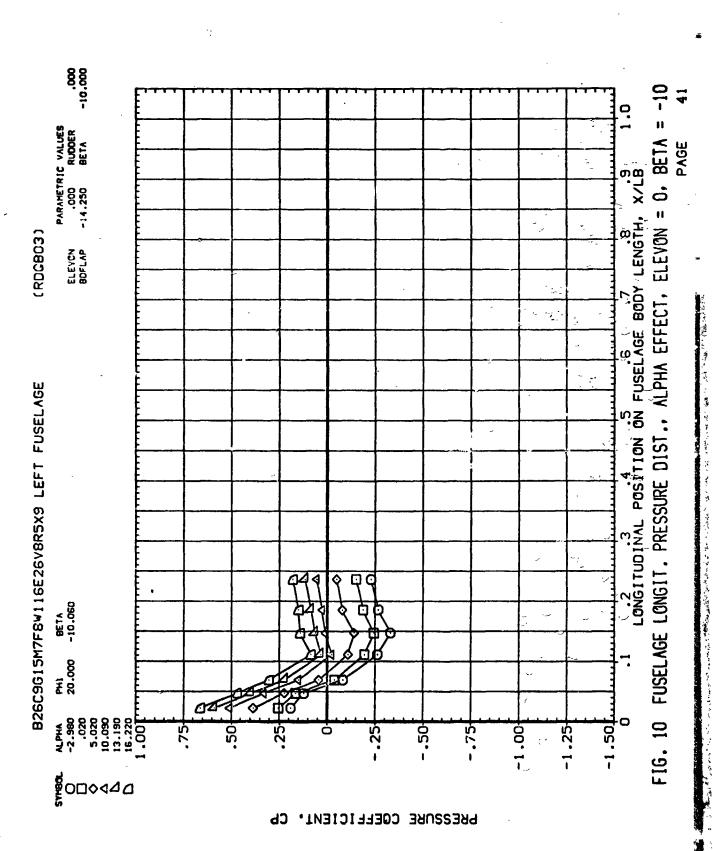
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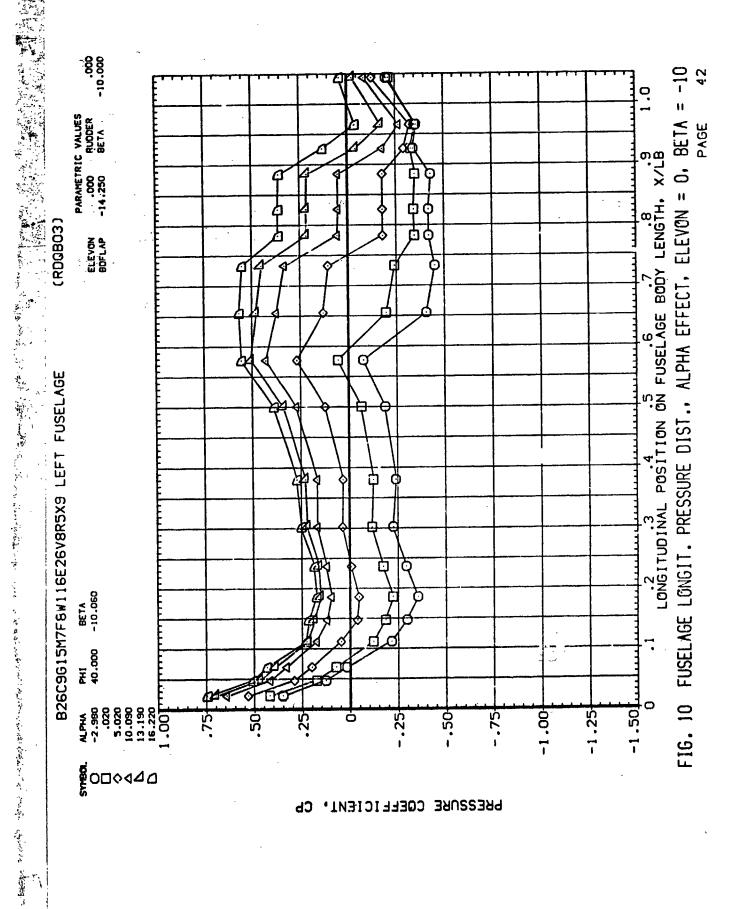
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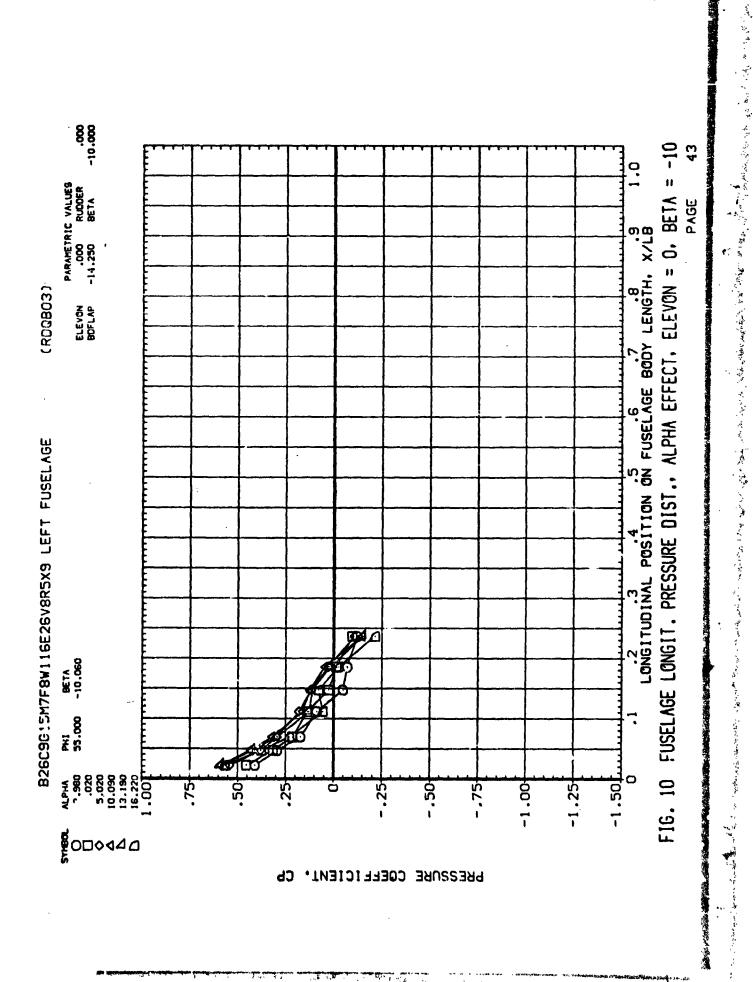


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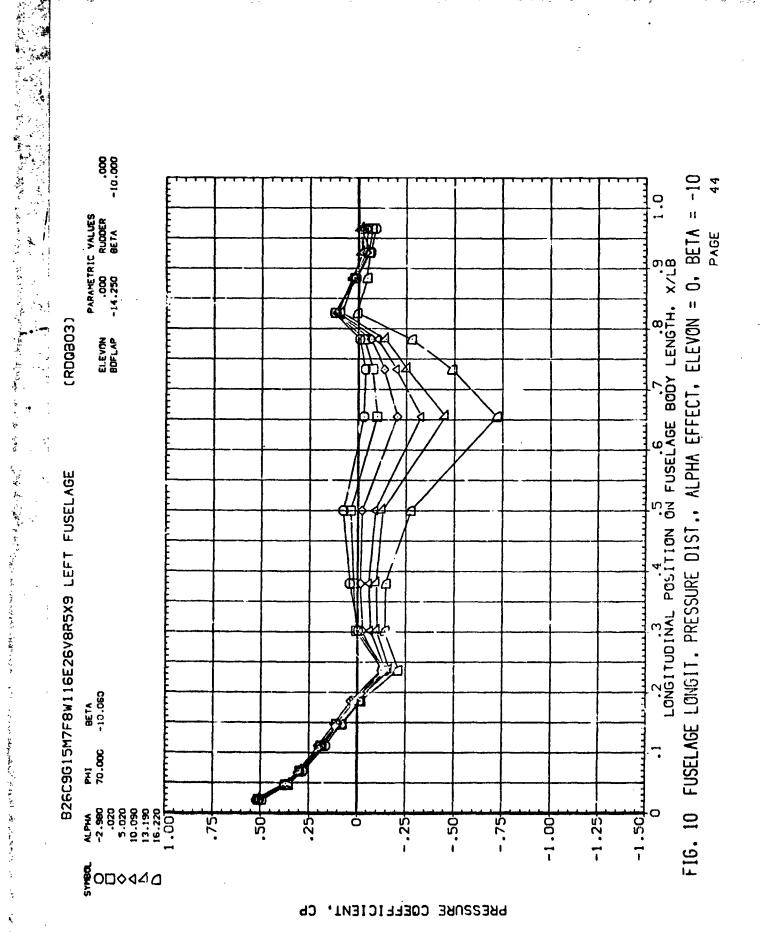
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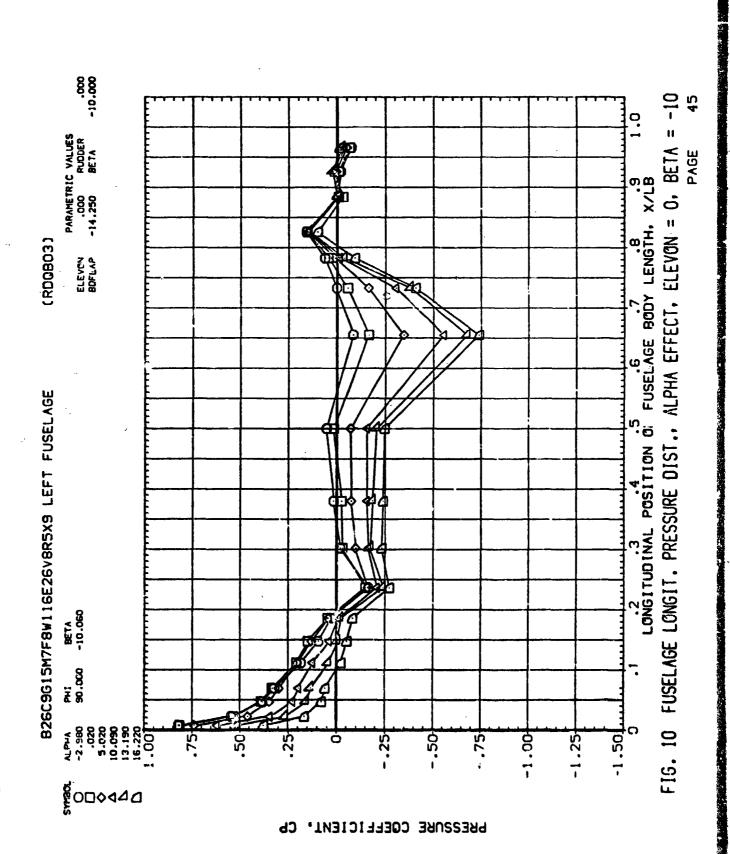


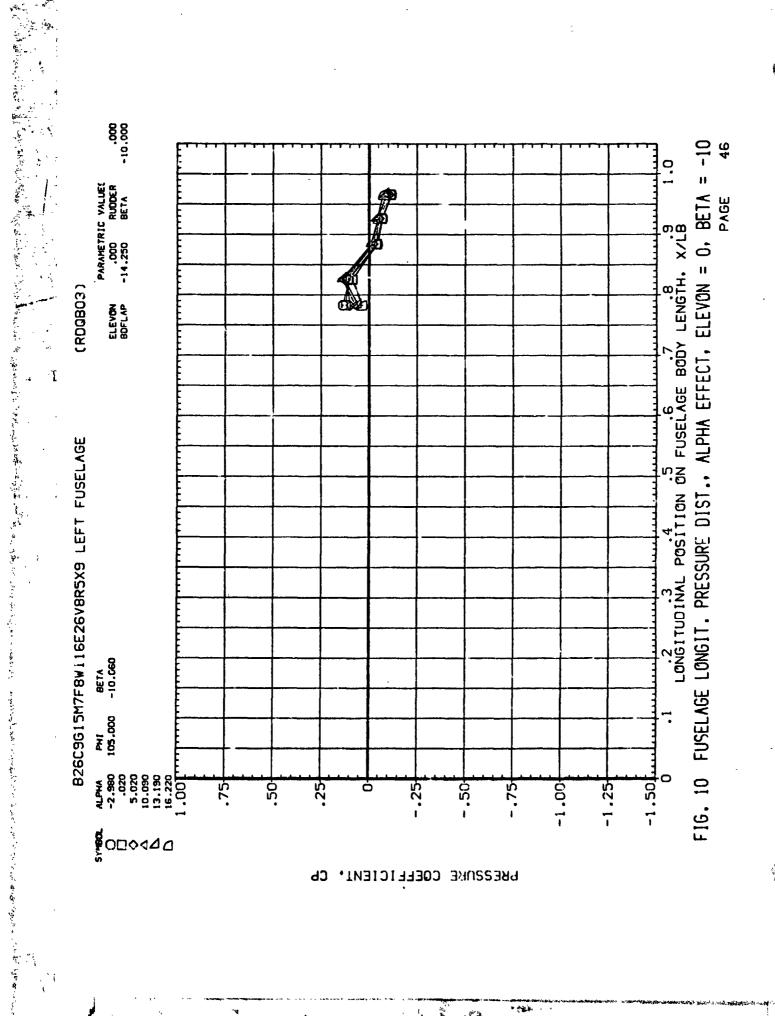
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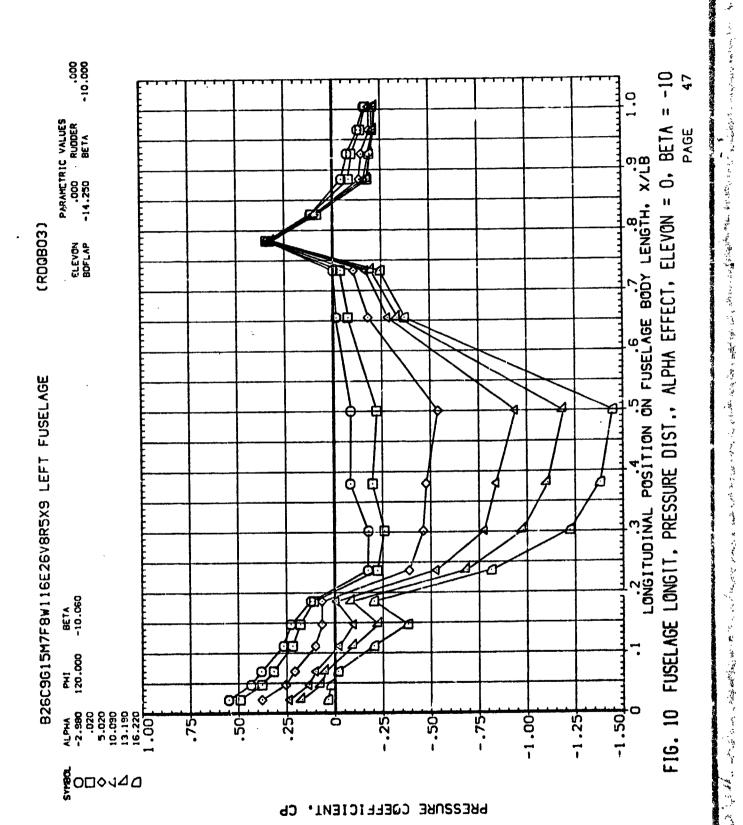
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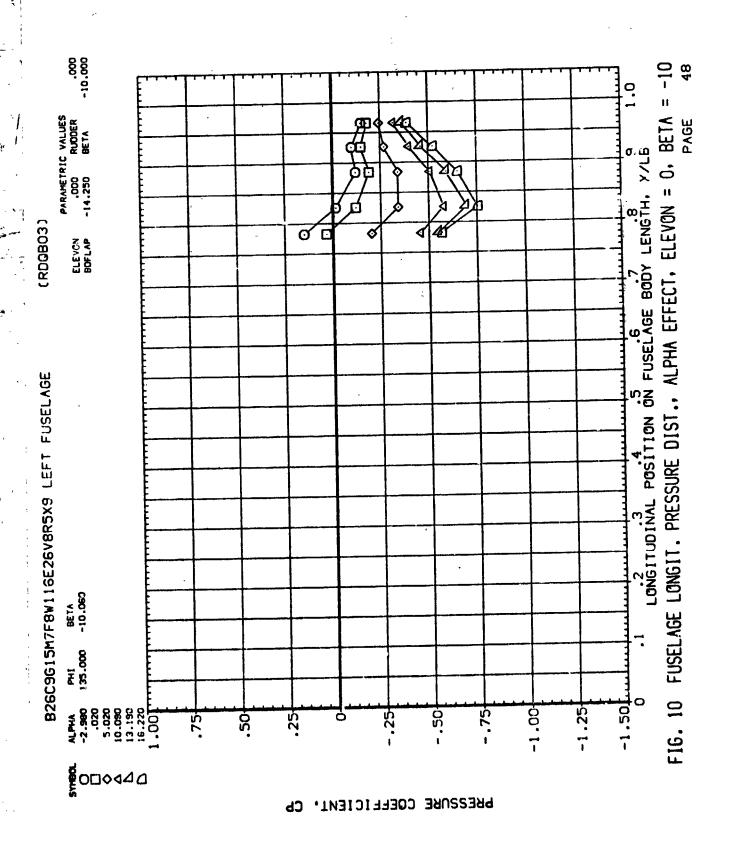
「人」というというないのできます

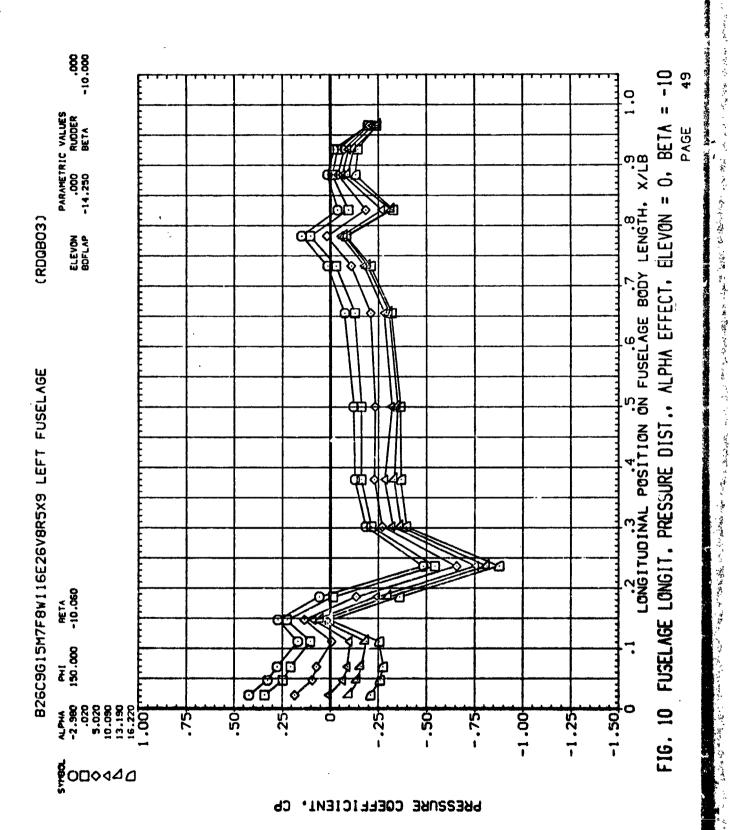






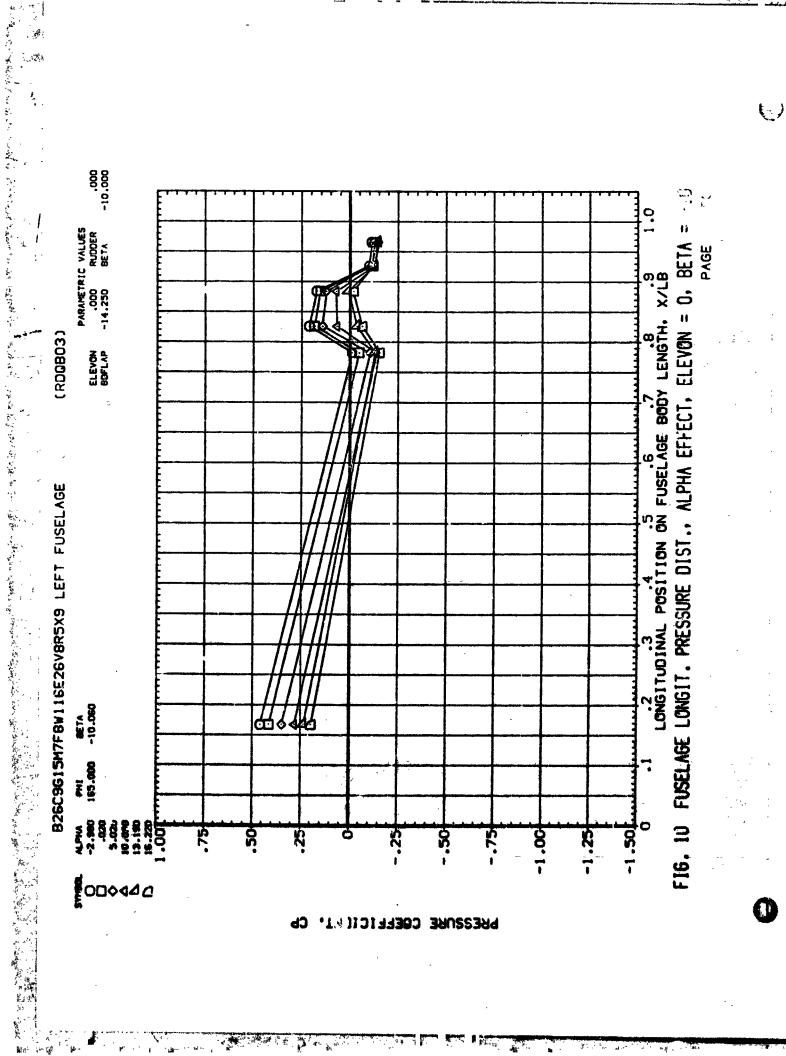
· 魔者の、まるからとうかけるが、こうとうないがあるとなっているとうないできないというないないないであるとなっているから、なから、 ころういれいかん いいこれできる

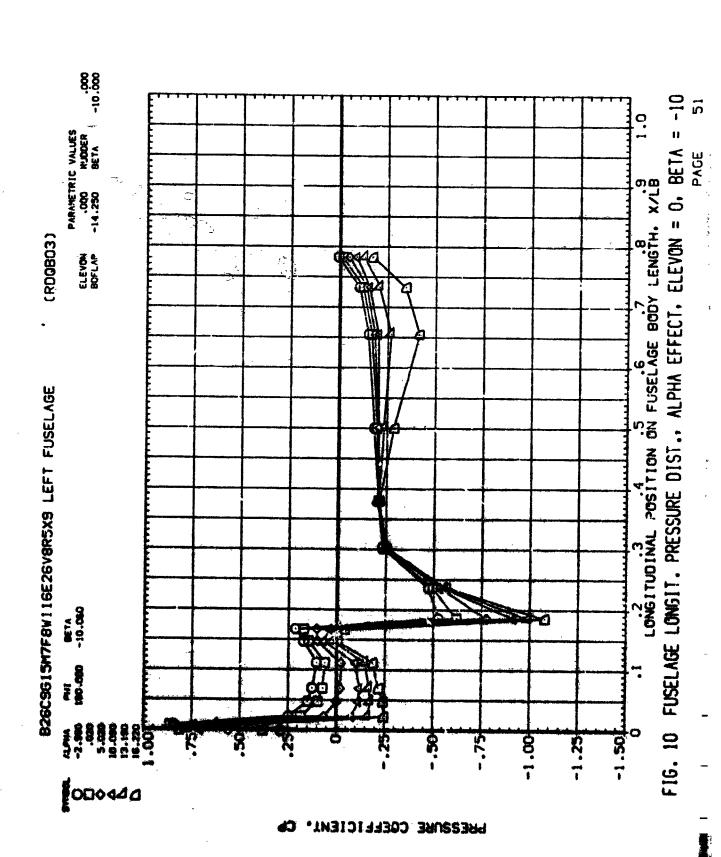




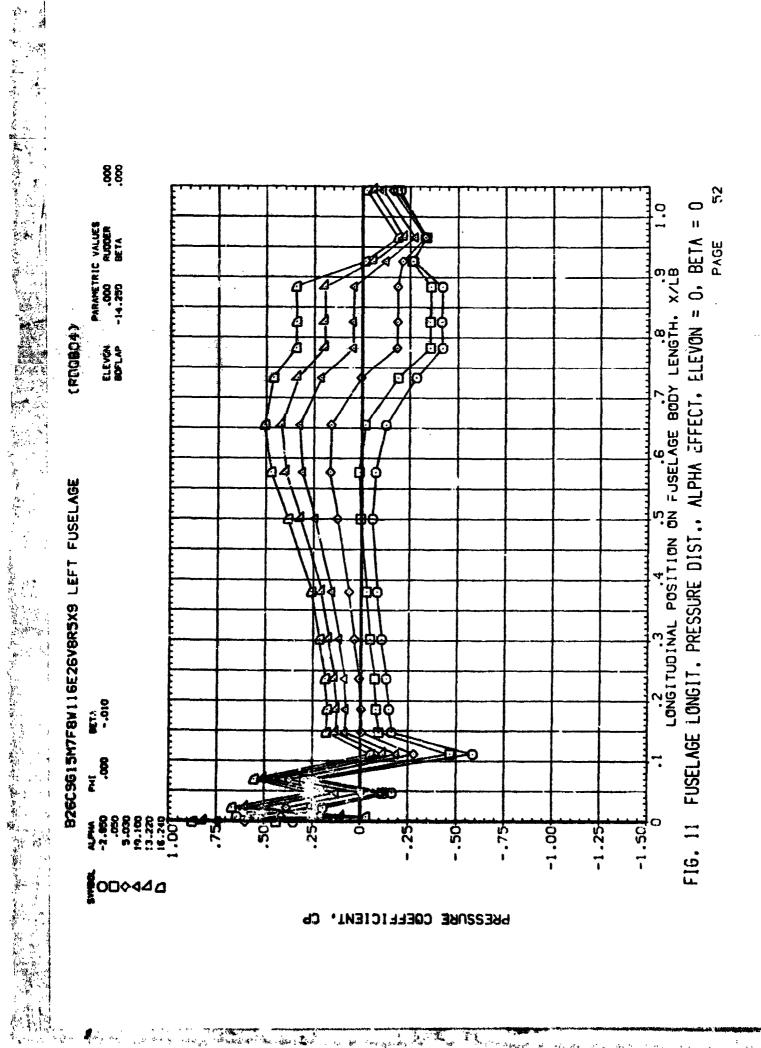
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不知意がは、それをういこれになるないのでは、これには、これでは、これをいくは、はいかのかないないのでは、これになっているというというというというというできないというというというというというというという



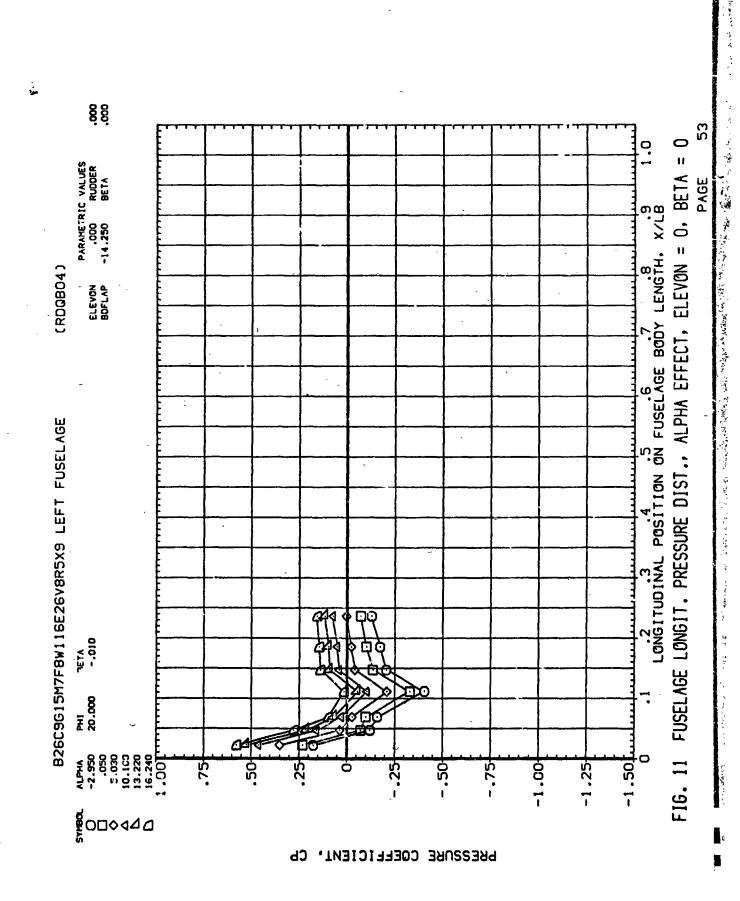


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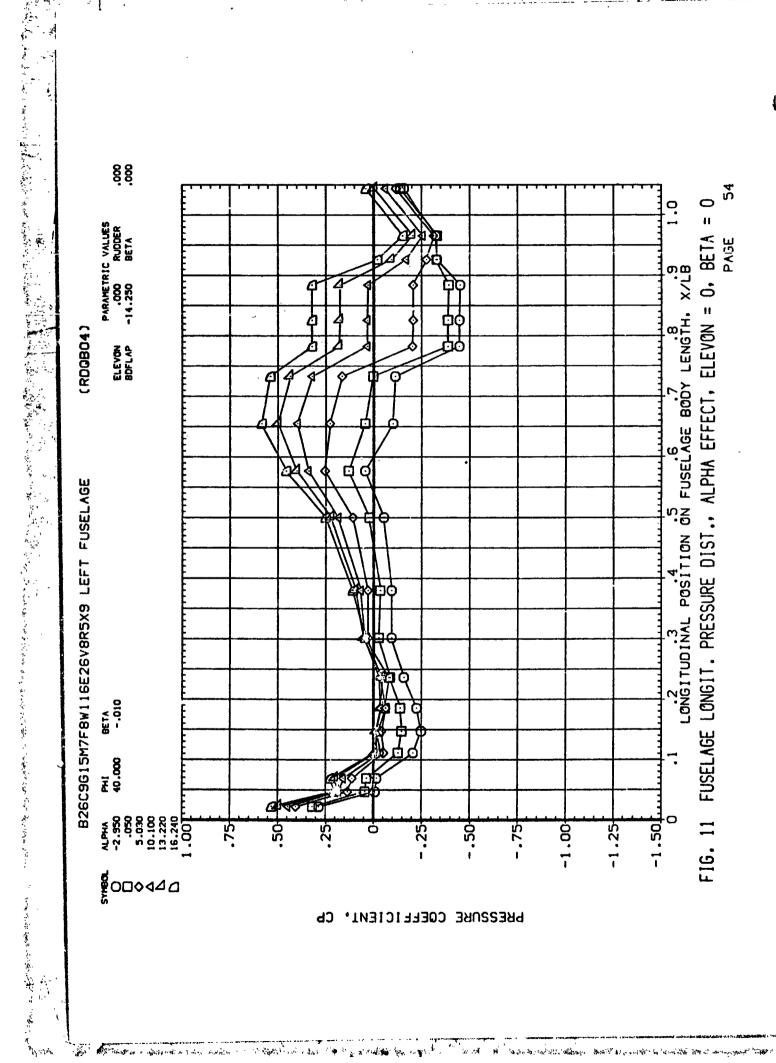


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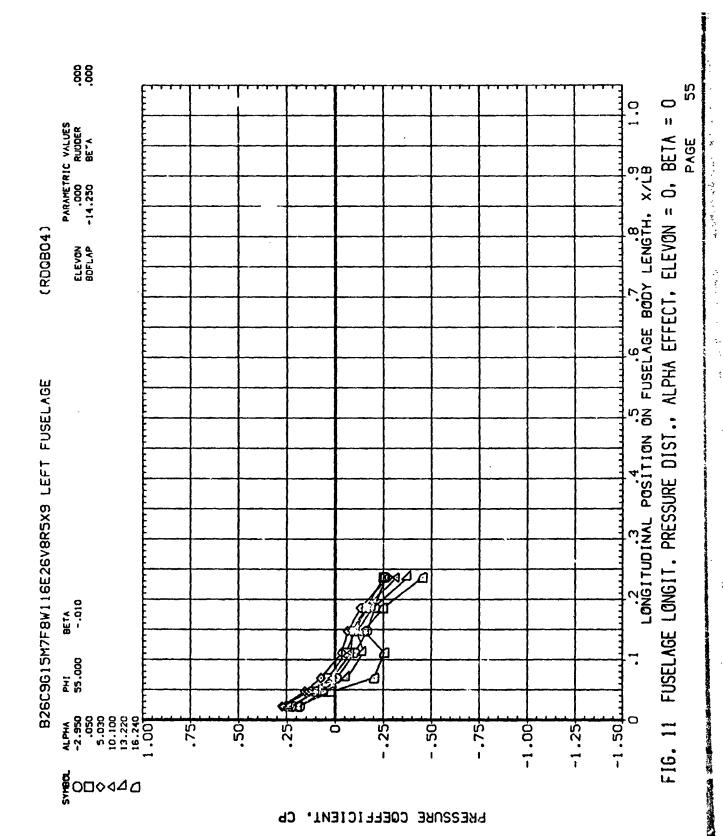
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是是一种,我们就是一个一种的,我们就是一个一种的,我们就是一种一种的,我们就是一种的,我们就是一种的,我们就是一种的,我们就是一种的,我们就是一个一种的,我们就

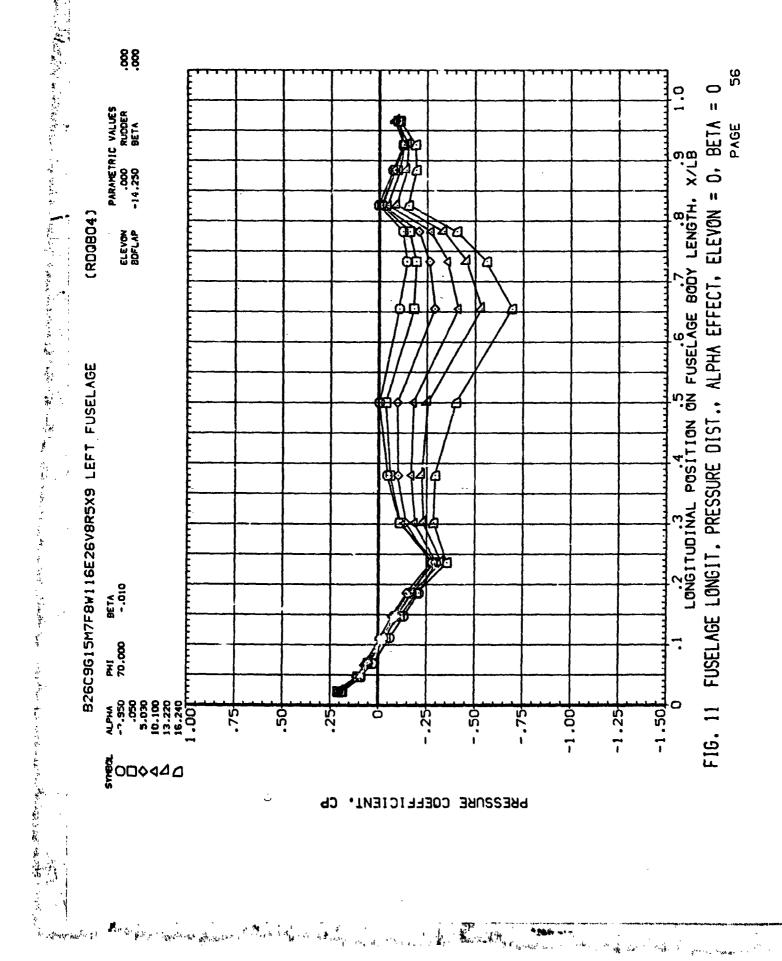


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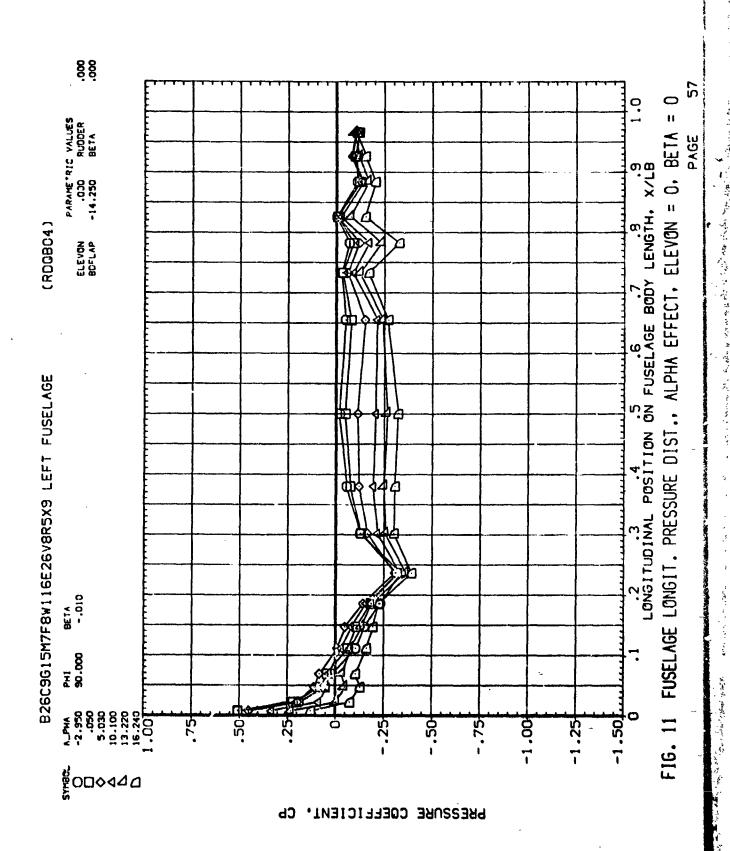


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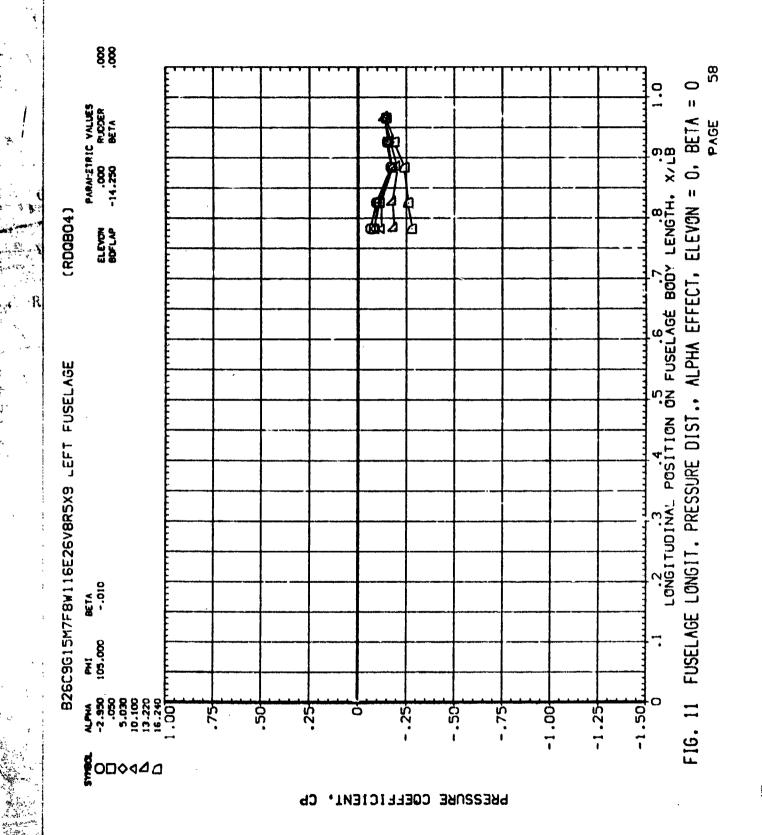
これのことの一つでは、一大の変なないのでは、あるいのできないというないのであっているというないというないというないというというないというないというないできないと



いっていれていている はないてん かいかいかい かいかいかい かいかい かいかい かいかい かいかい かっていかいかいしゃ ではない しんじょ これならしょうし



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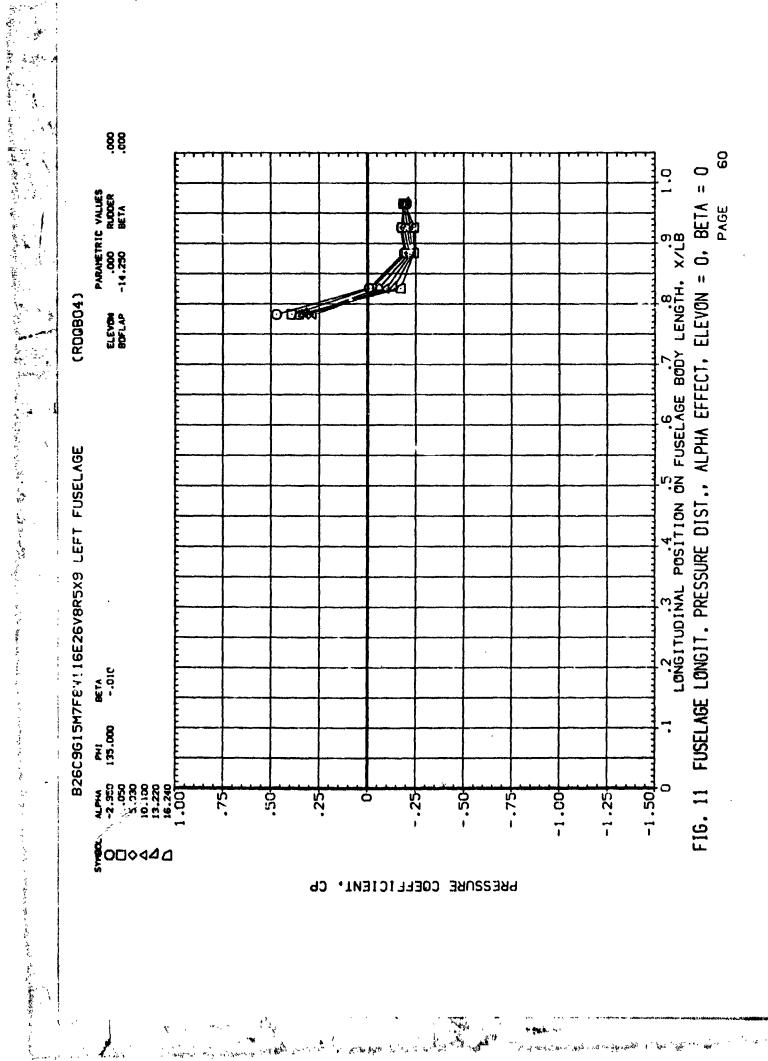
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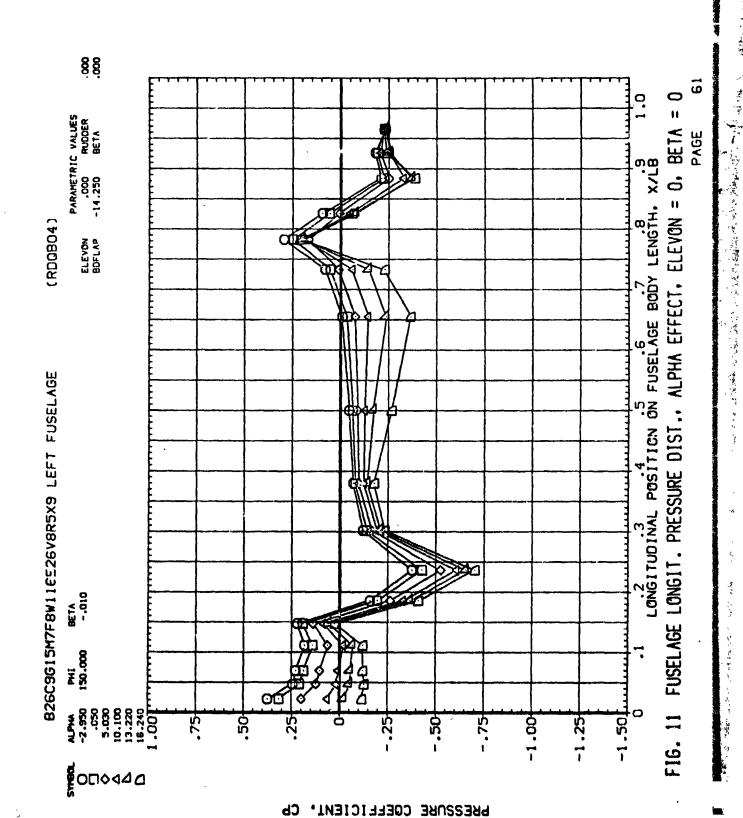
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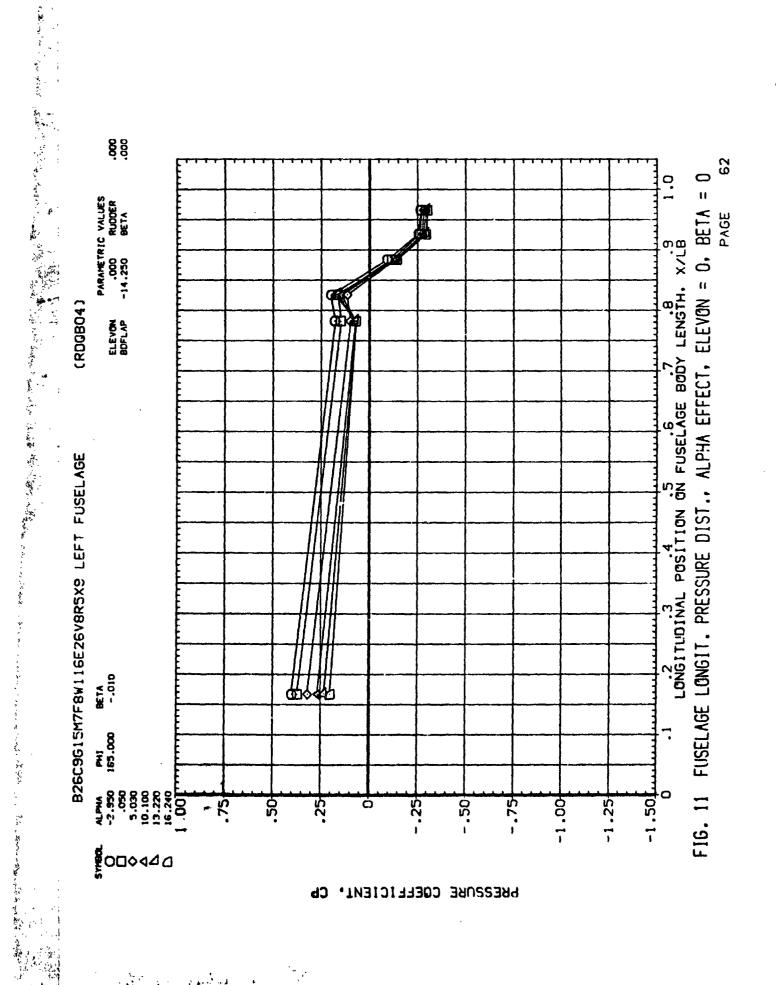
いないからいからは、これの人かられ、本外ではないないとのでは、からないのでは、からいのでは、これのできるというではないからなっていましていましていないというというからいいというというというというという



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·丁里公·台·九丁為獨國軍軍以外 外中等門時



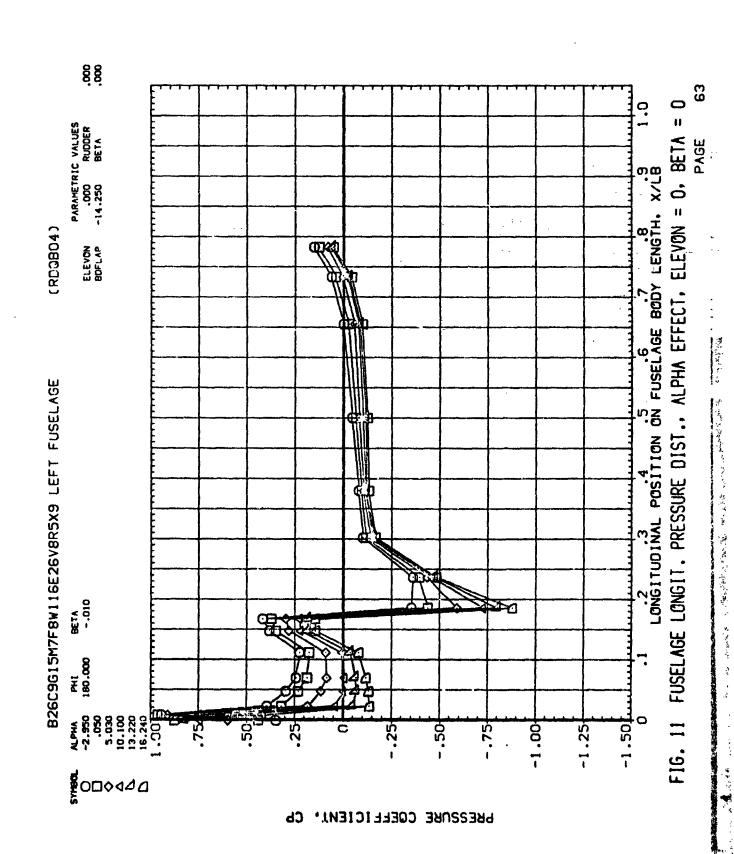
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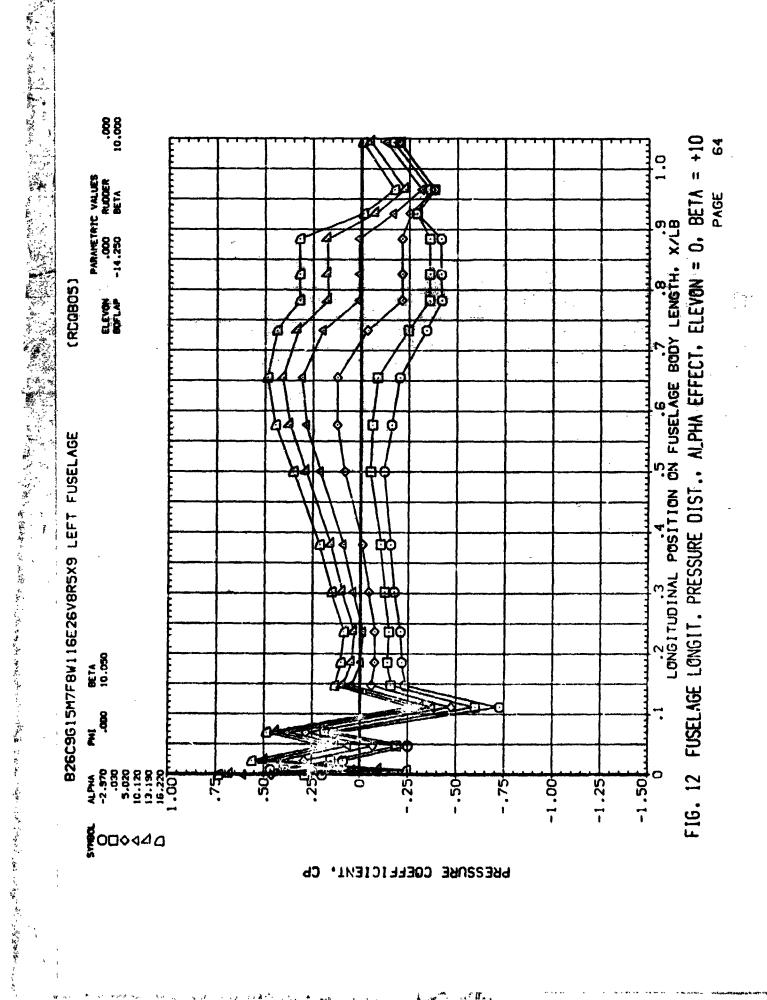
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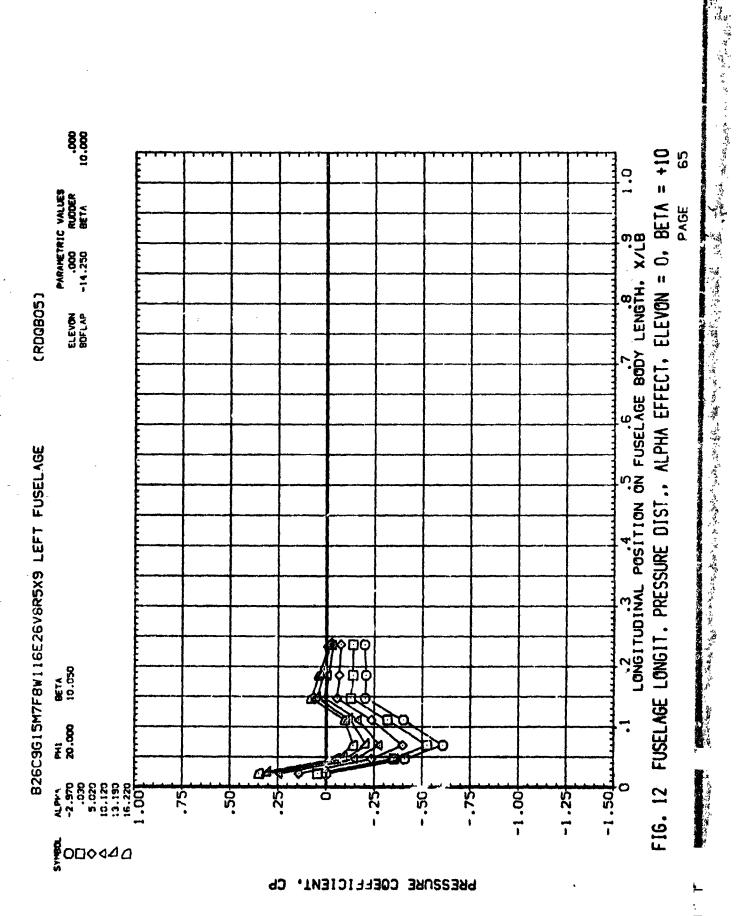
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Lings Line Wall & Steel



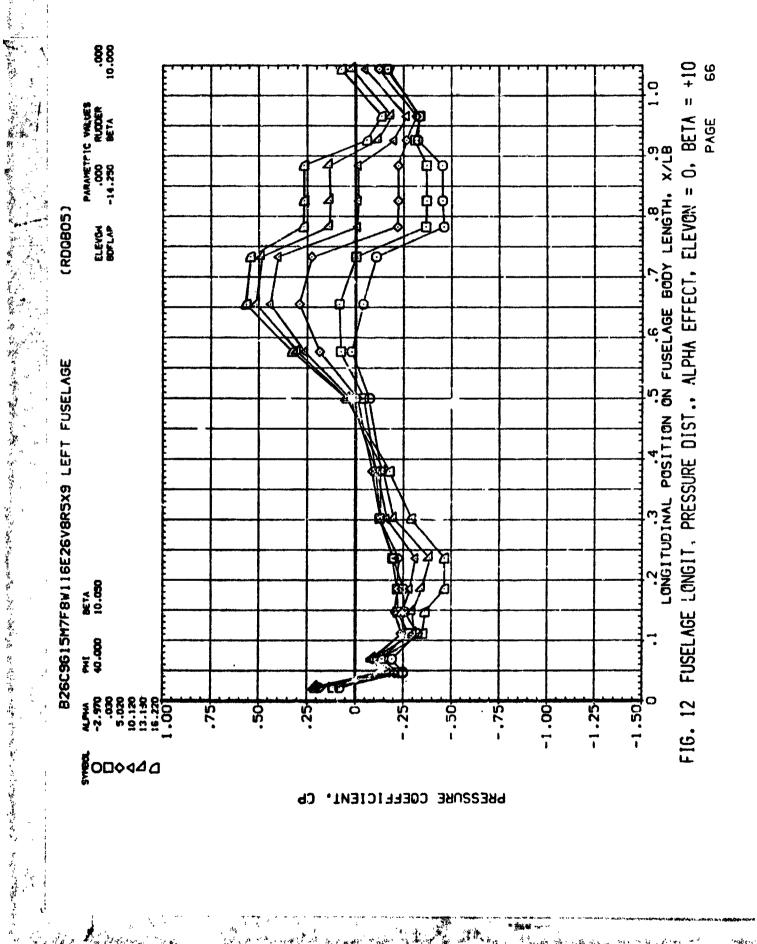


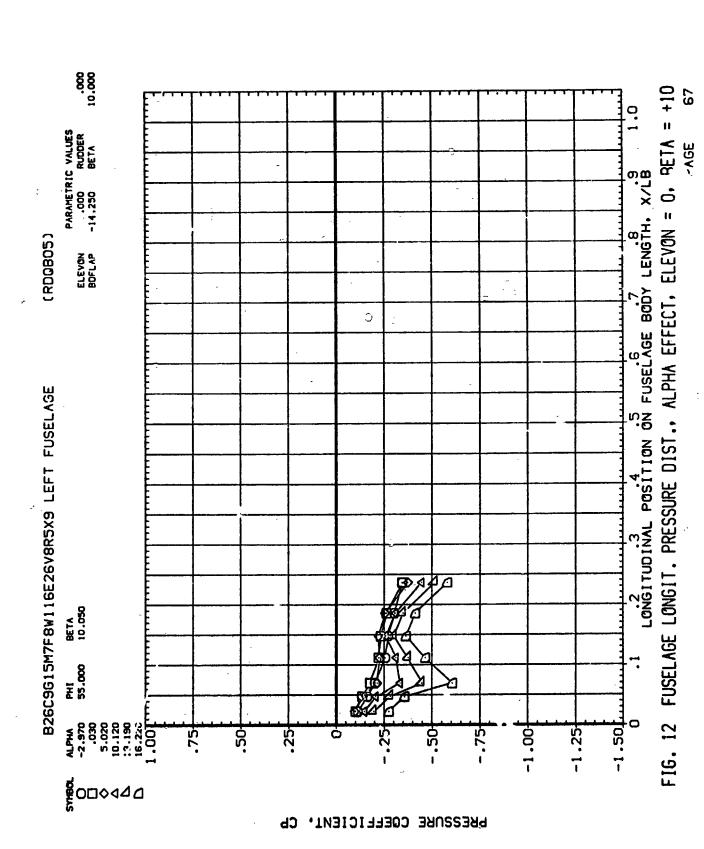
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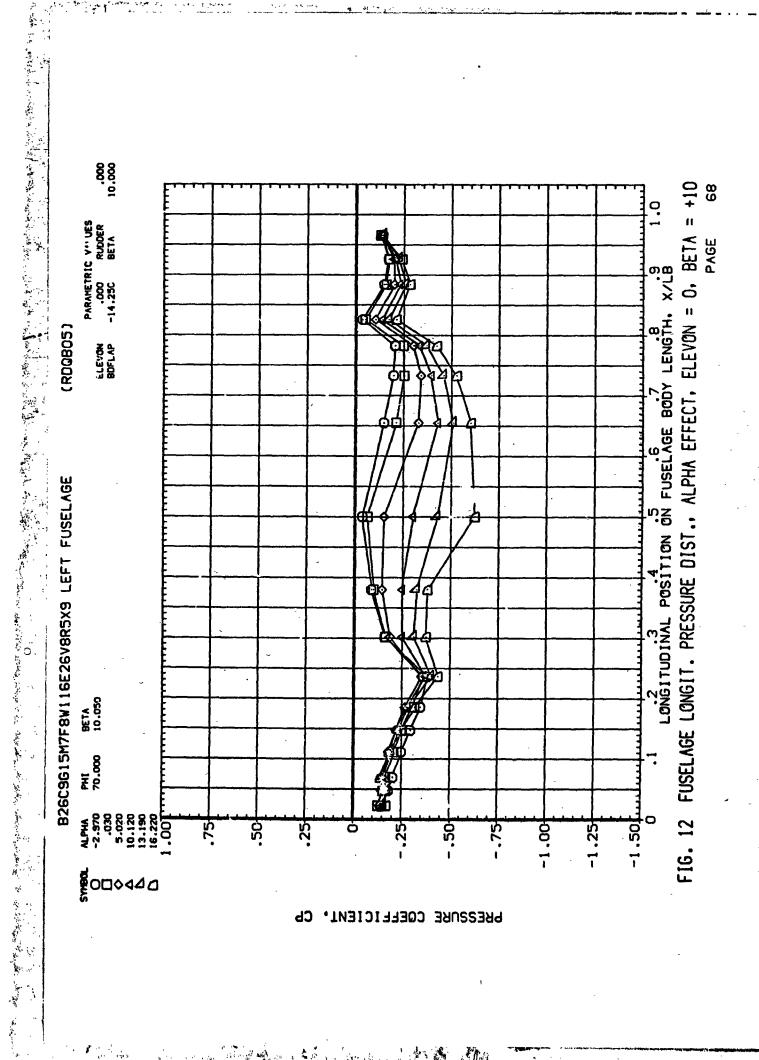
The statement was a second of the second of

小是是一人的人等 人名 人名阿里斯特 我一年一年五月 奏上上八天

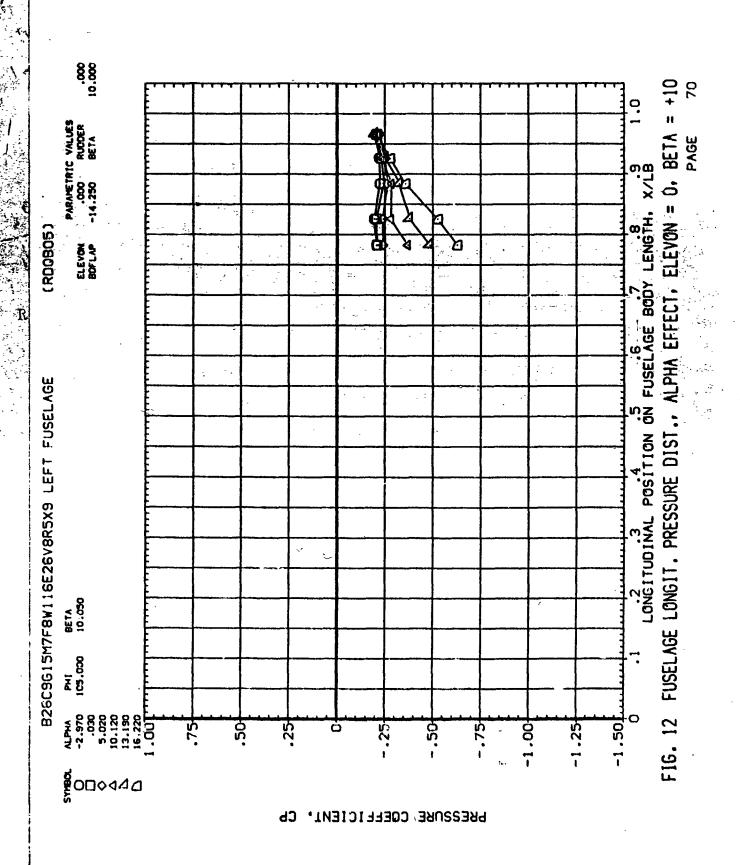




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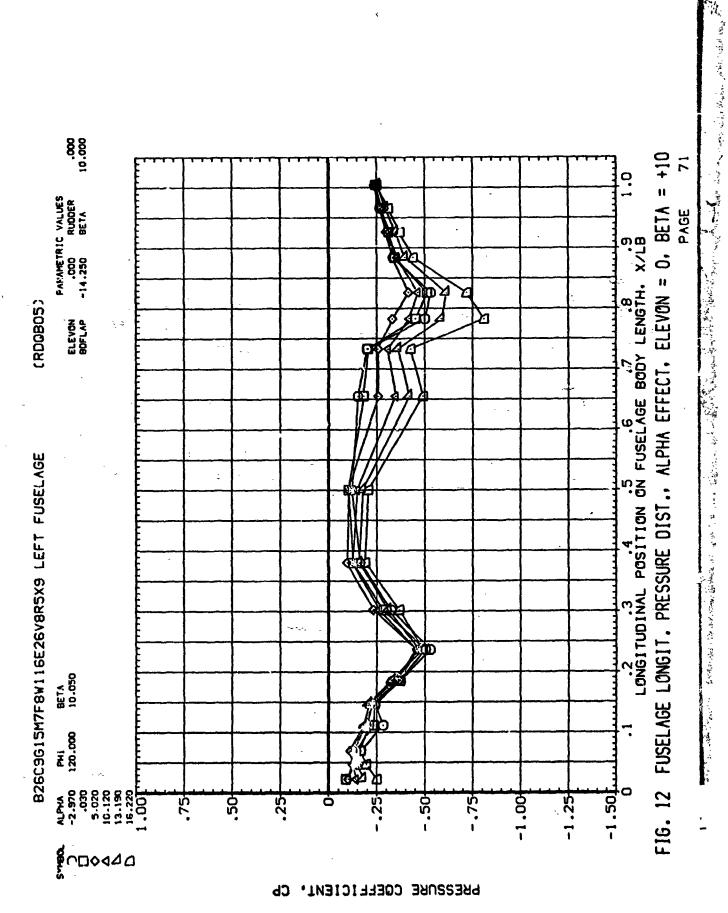


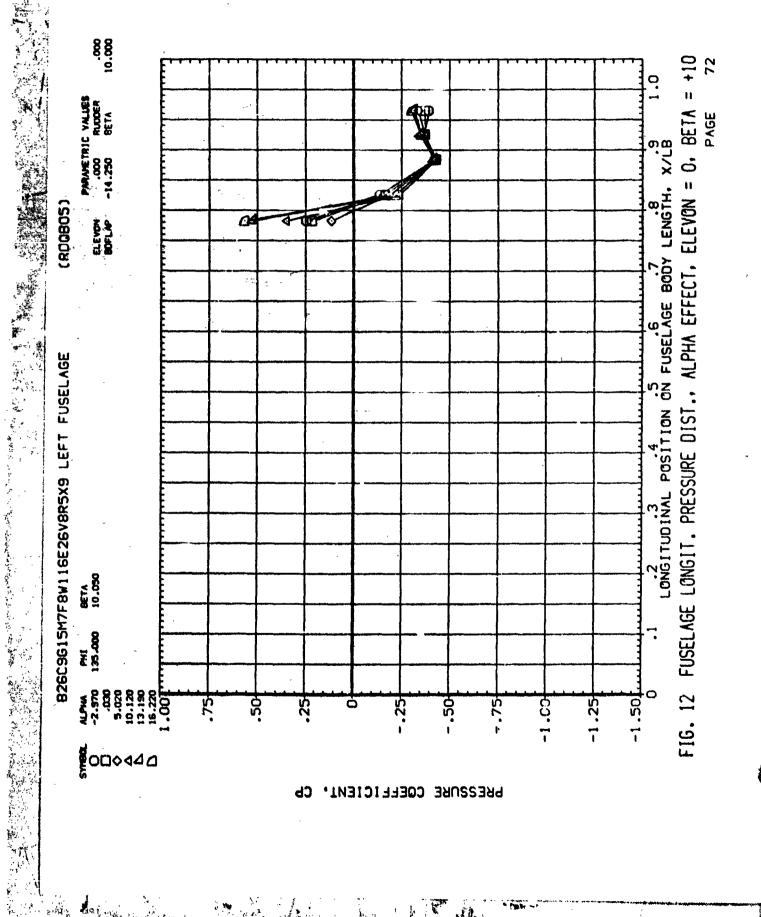
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A MARIANA

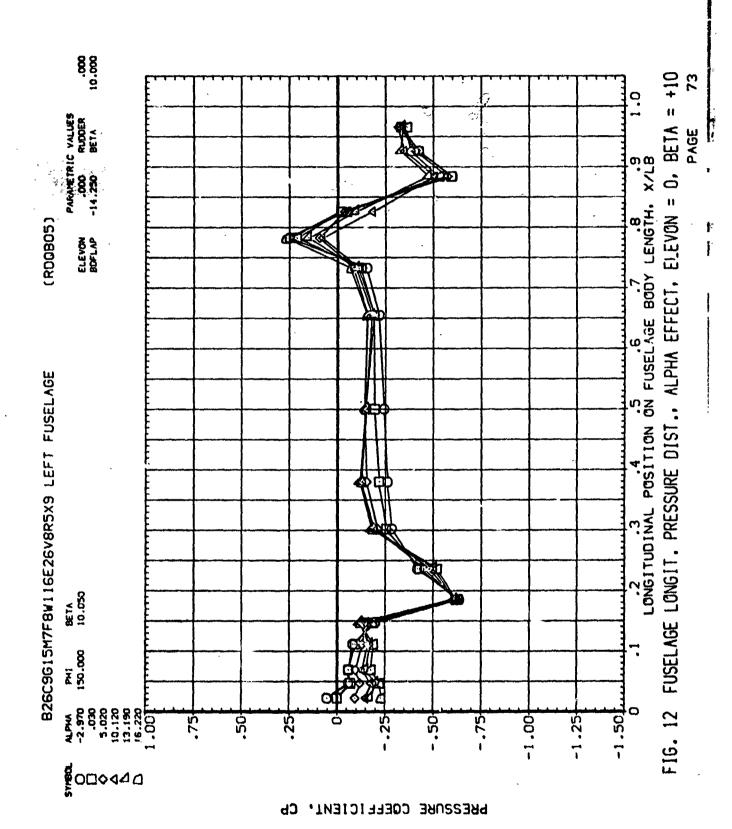
こうこう 一切がきちゃくろう

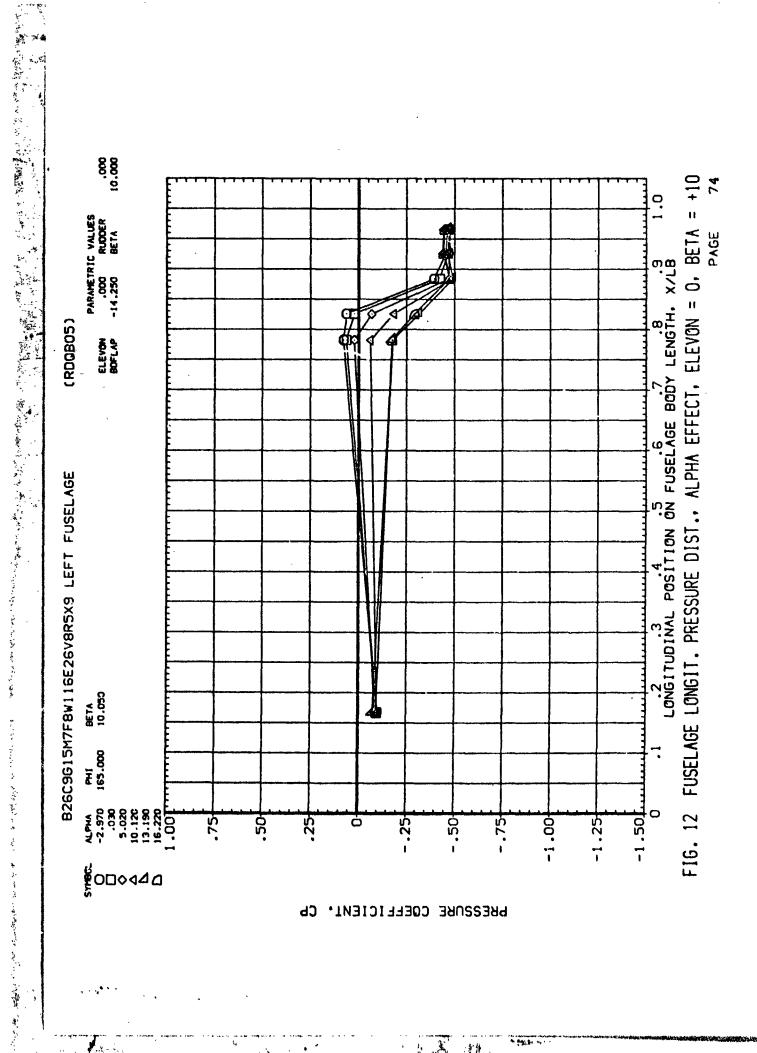
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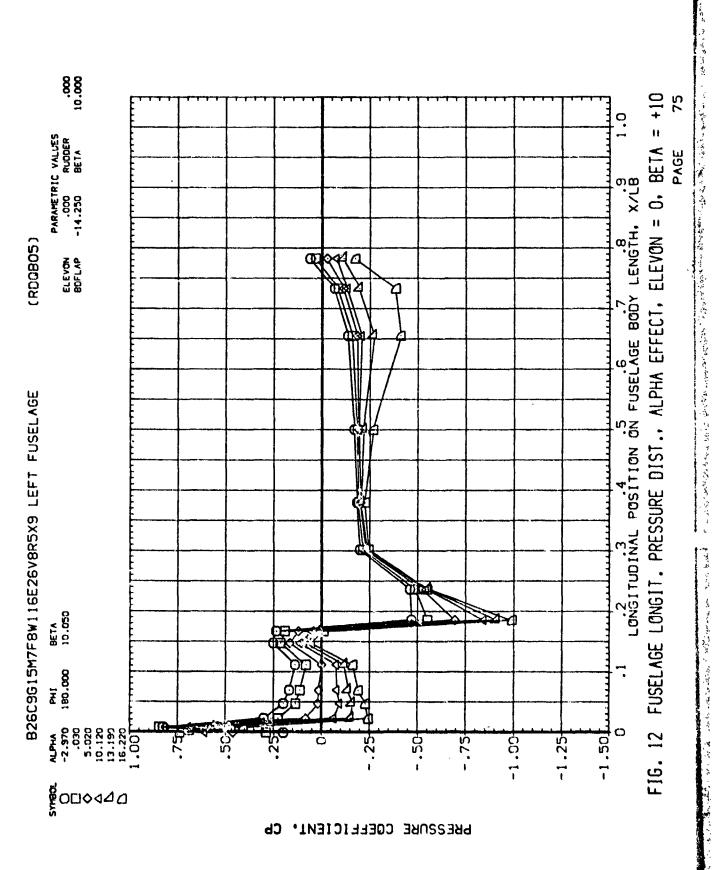


これがあるからのあるとというないはなるながらなるおのでしているというとうないないないないないないないないない



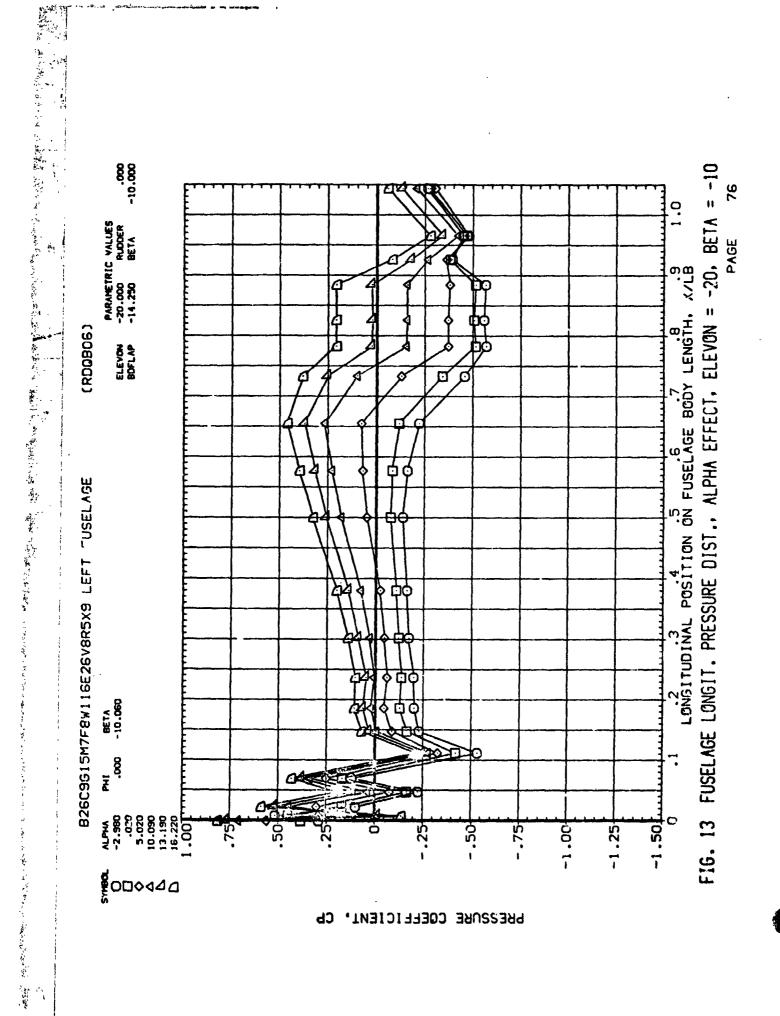


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ないのれ 節うれい 野家村 いいくこれがいてきない ときない とうかんさいかい 書書 しゅうかい ではなる というかく てきしてものものできょうから ひじょうかんし マナラ

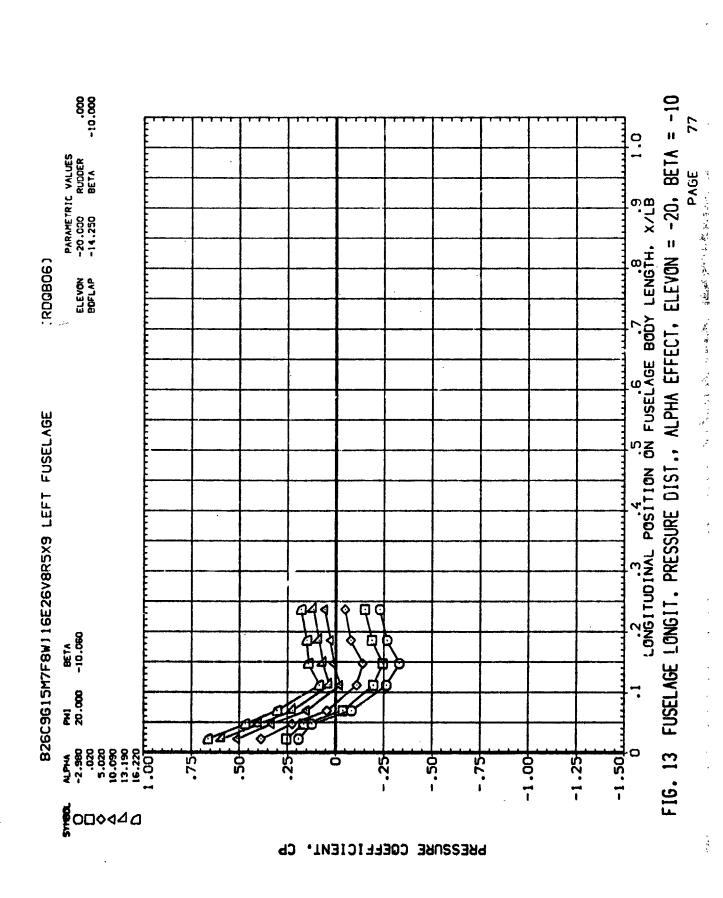
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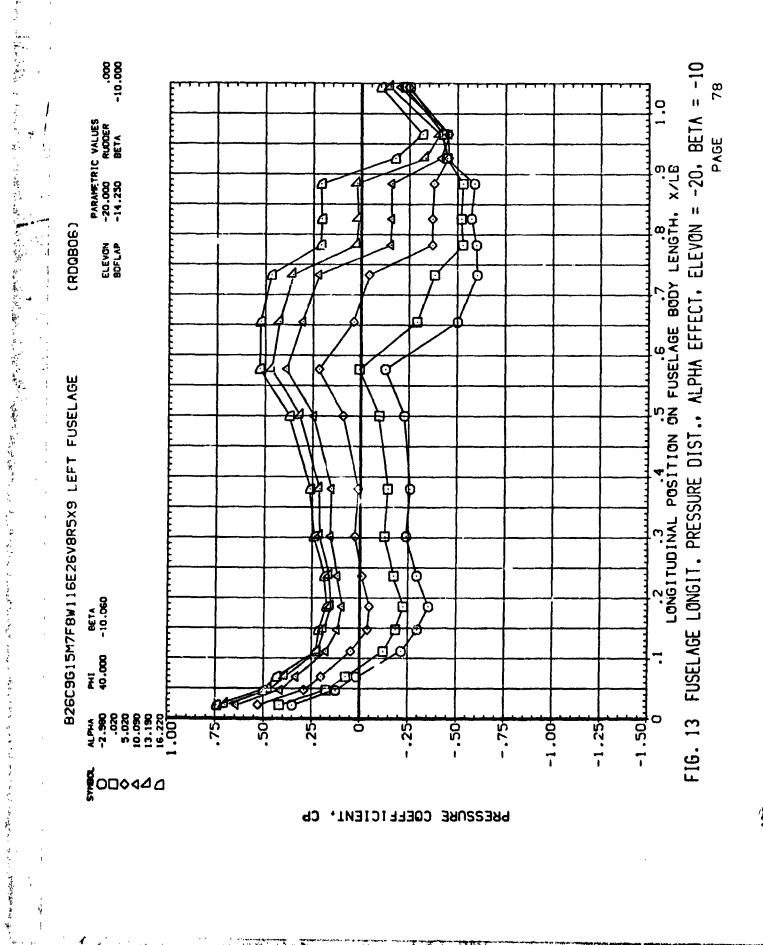
Barrell !

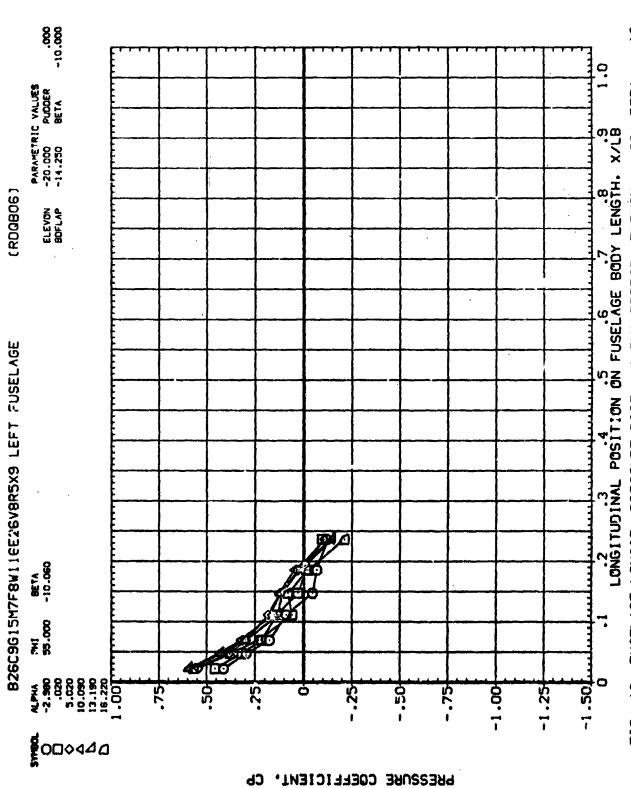
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不能ないかいかはないをから、そのないのはないであるとうないとなっていますがないからいかないからないからないのとのであれないが、おからますであるからないには、いいのは、これのは、これのは、これのは、これの

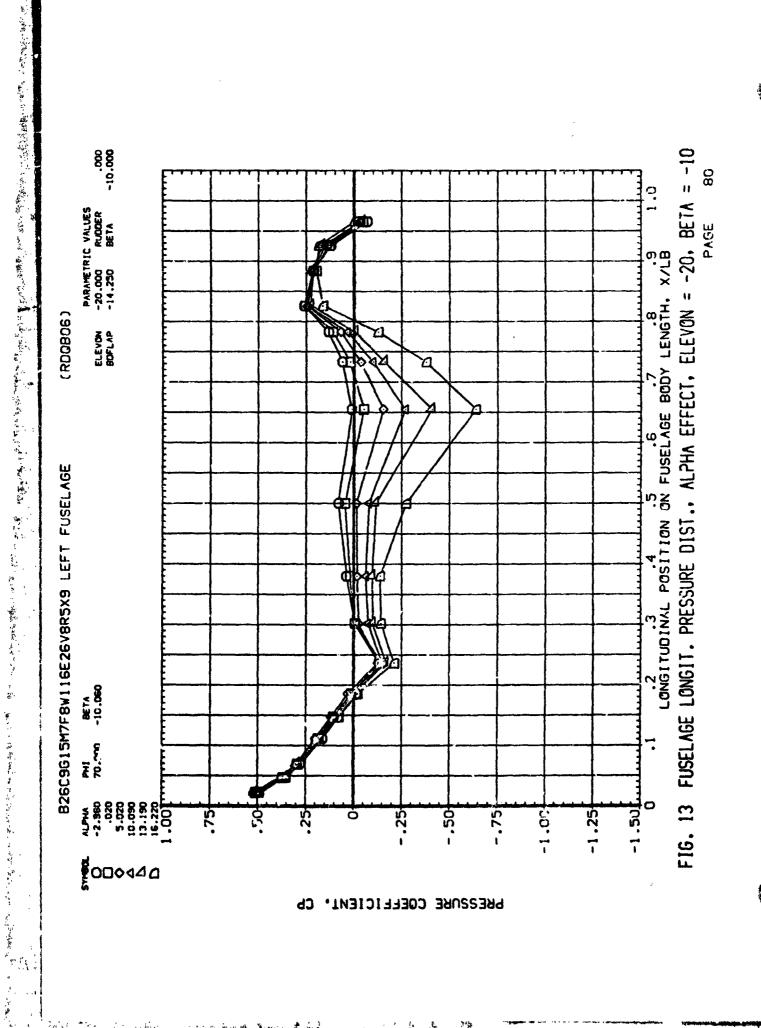




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おおいて、日本のでは、日本のでは、日本のでは、「は、日本のでは、日本の

「「「かい」というでは、ます」、そうなないなが、はらいないないというないのでは、これないのではませいというないできませんが、一変を変える、一変をはないないない。

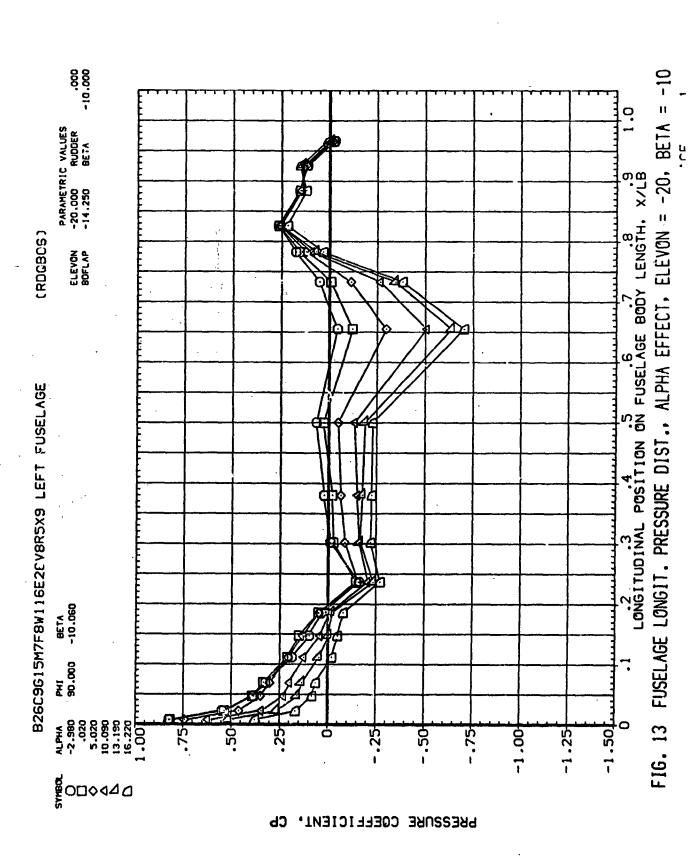


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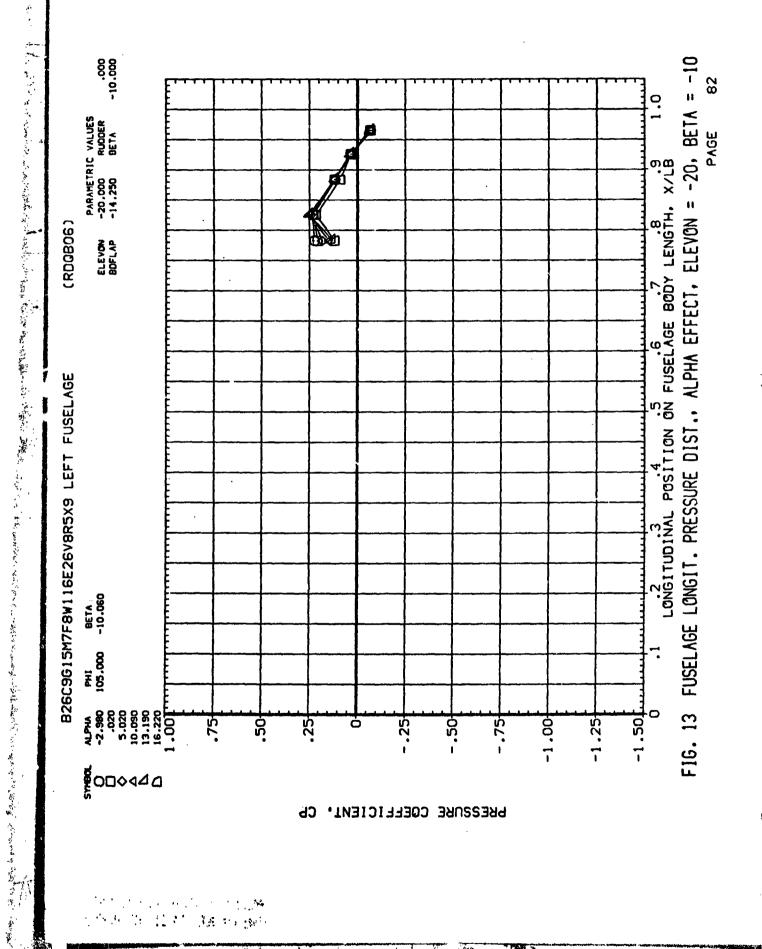


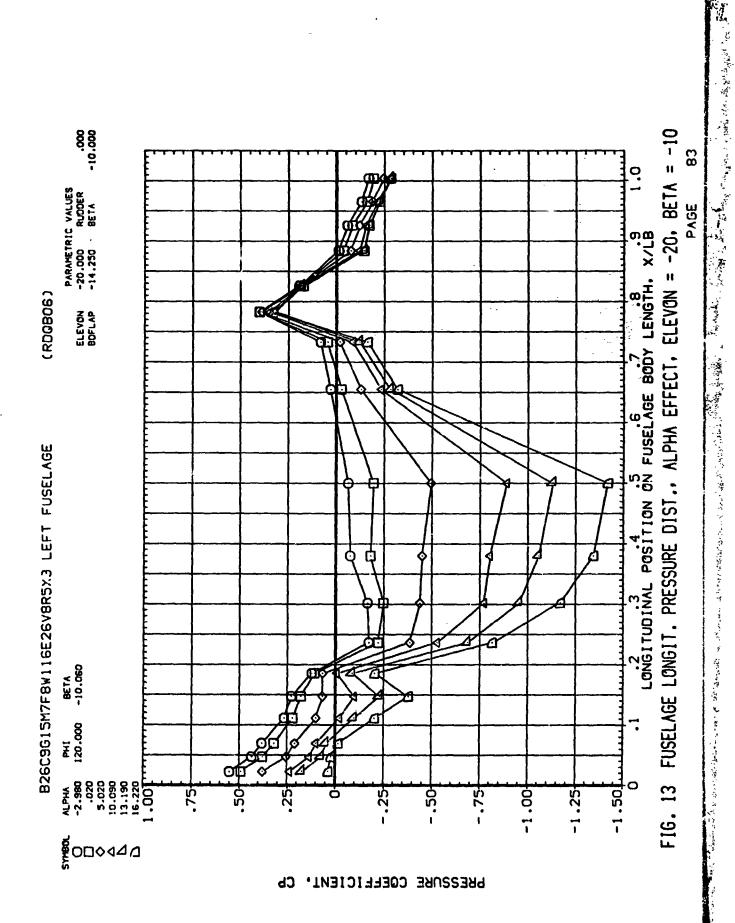
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THE PROPERTY OF THE PROPERTY O

· 教育のは、からからのできるからないというないます。 ないない あんかん あんかい なんない かっとうごうないか ヤーション

いる湯を言



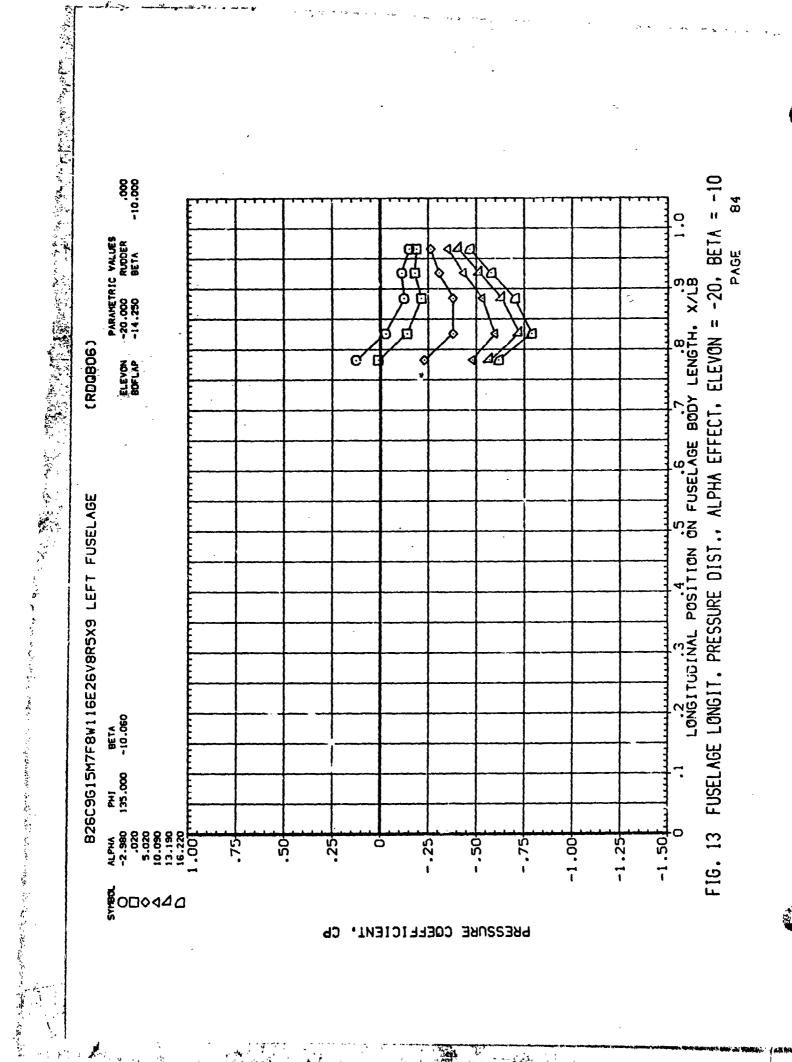


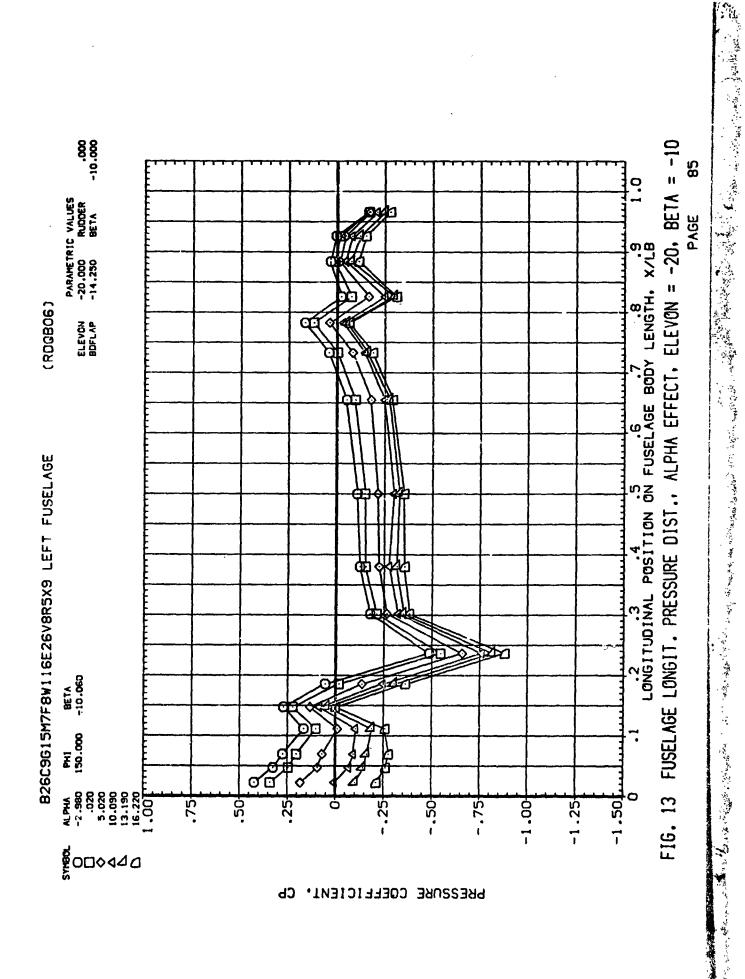
以外外教育、中华、各种教育等、一种的教育、中央企业的人、经历的人、经历的人、经历的人、经历的人、经历的人、经历的人、特别的人、中国的人的人、人名人的人的人,是一种人

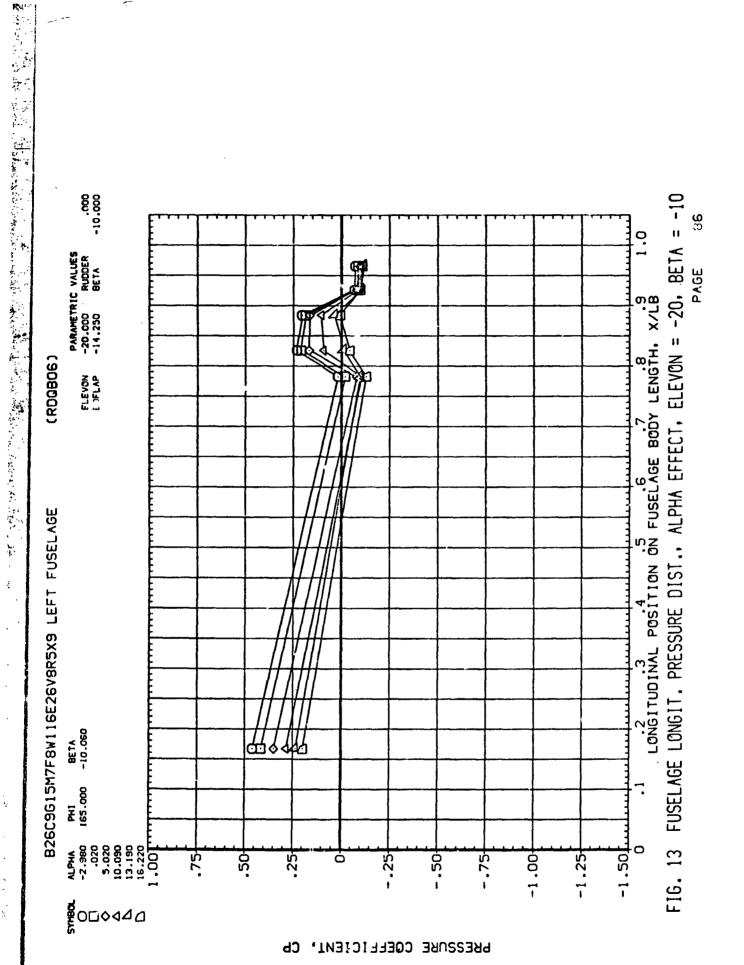
こうことはありは関から、こうなどをなると、おうかっち、これりしてきして、一番いいなものからからまれる、小大大学をよって

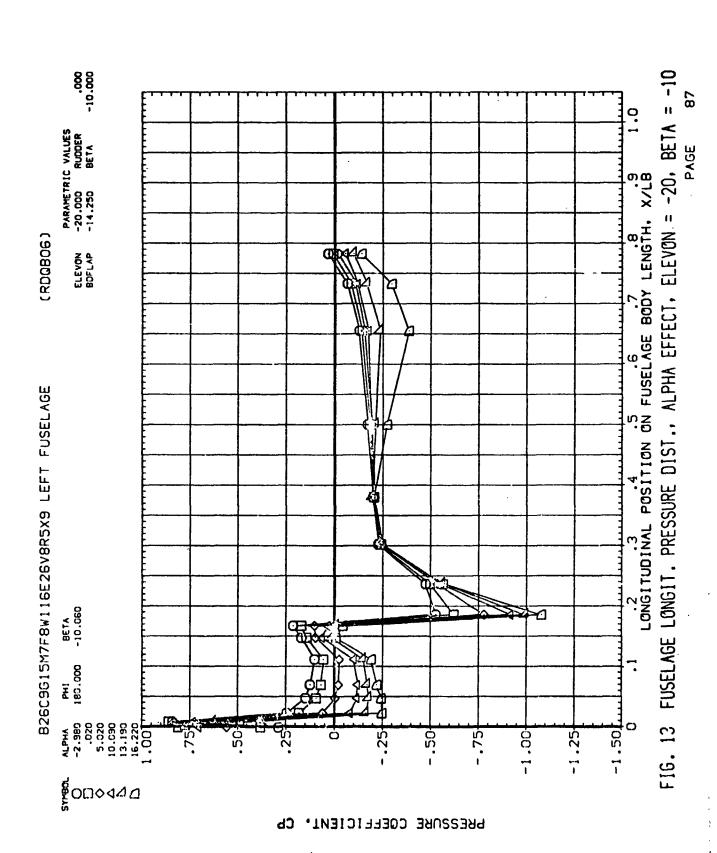
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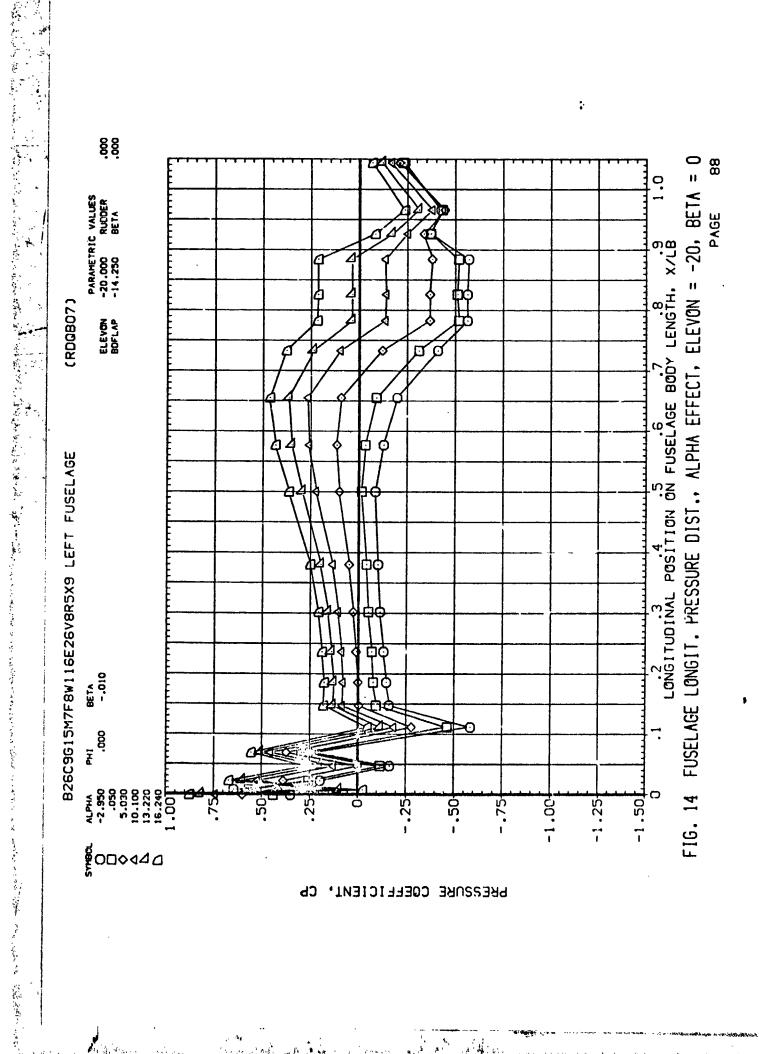


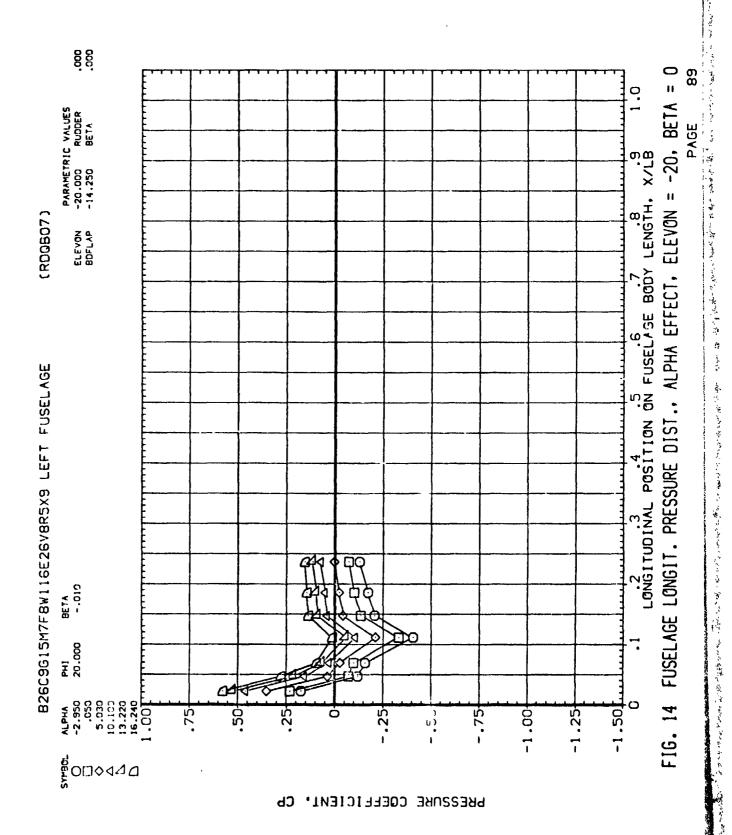




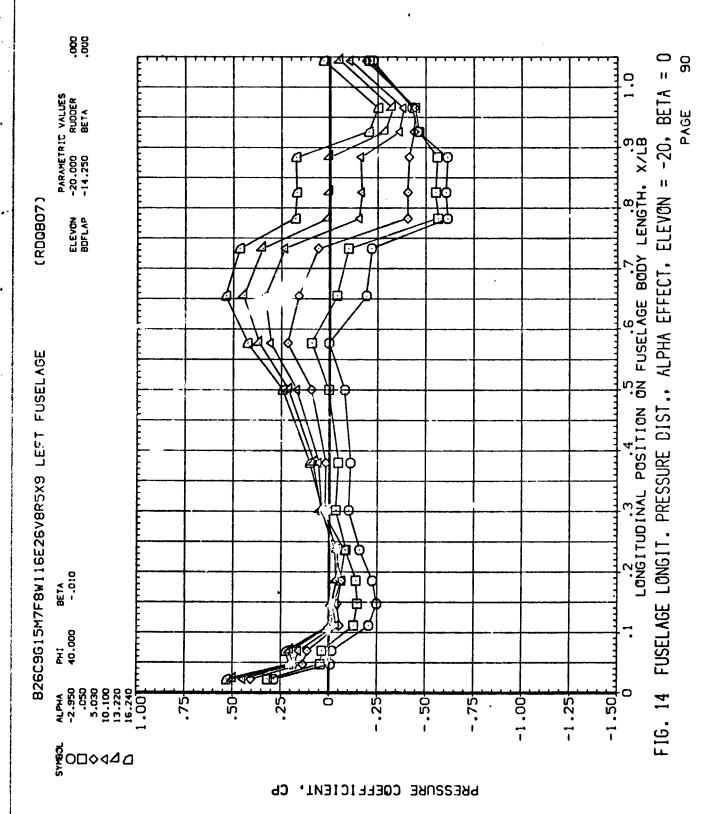


こうしょうしん かんかん かきかからない としい のまかから しゅうかき とかれる





からことはいれたといいから、といれているというできないというないというないというないはないのはないないのであっていれないのであるいないというというというというないというというないというというないという

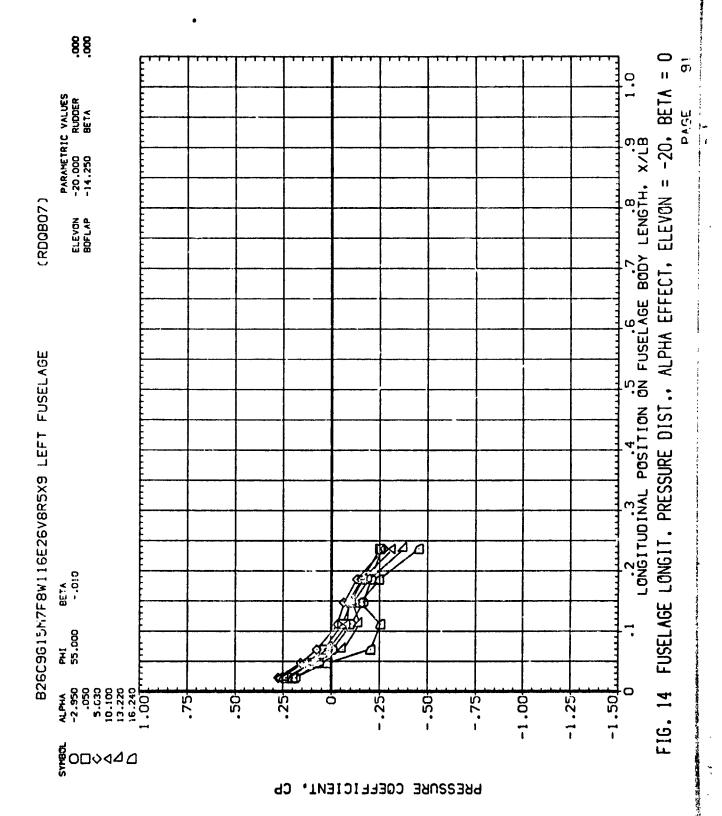


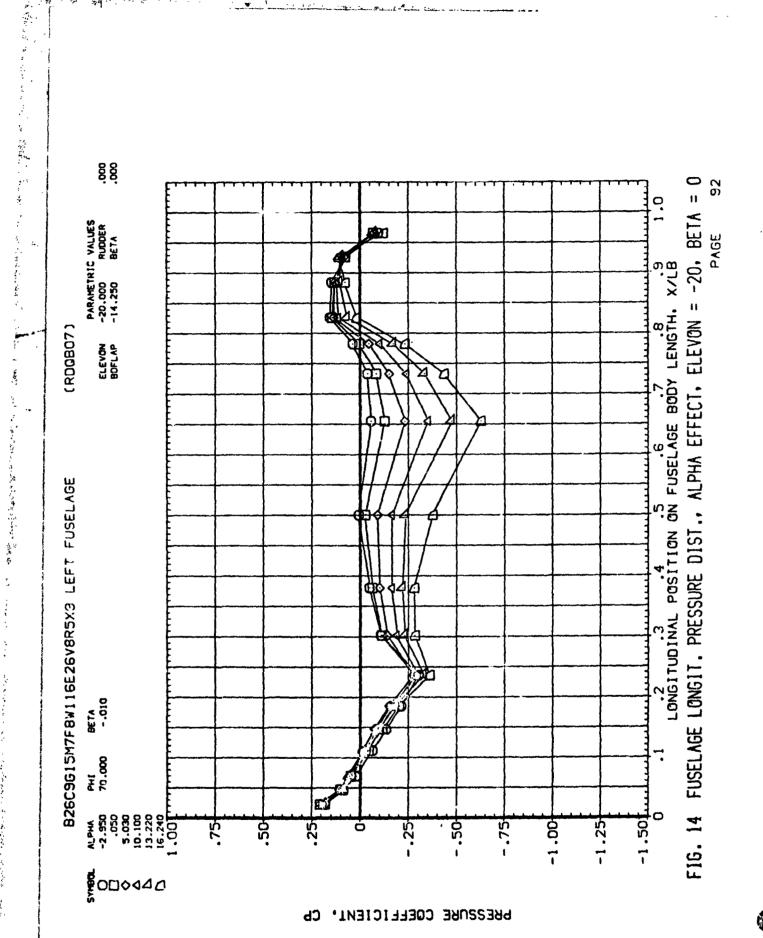
A second of the second of the

から生き、いんとうからいかない 一分がかいからい そうちゅうかいき かかしかい いかとうしょう まない ひっかん からながらしななからな はいかき でんしょう かいしょうしょうしょ

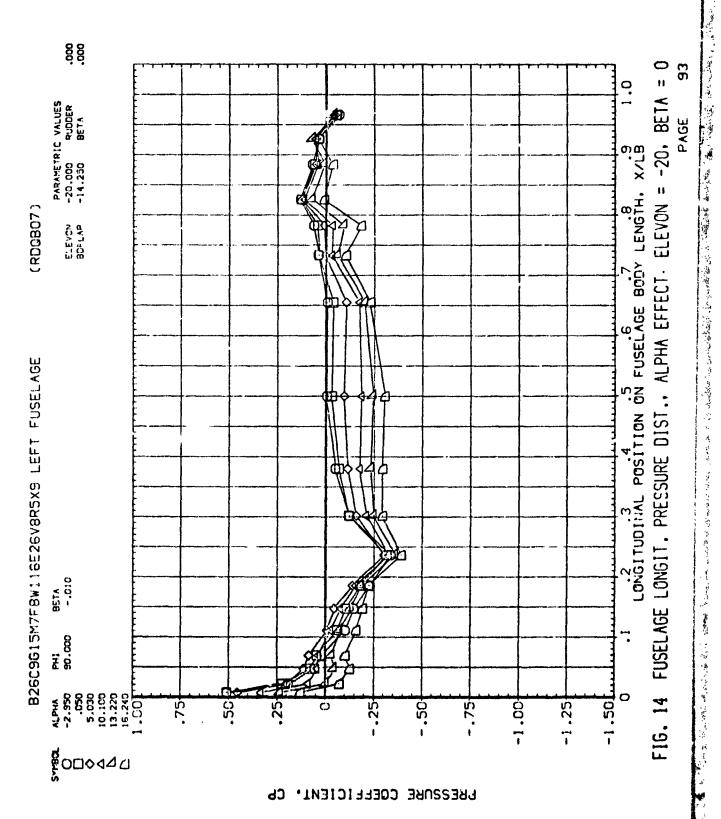
A Property of the State of the

で、東京東の天然ので、中で東京は「東京教育の大学」では、大学の大学の大学の大学の大学の大学の大学の大学の大学のでは、「「「「「「「「「」」」では、「「「」」では、「「「」」」では、「「「」」では、「「



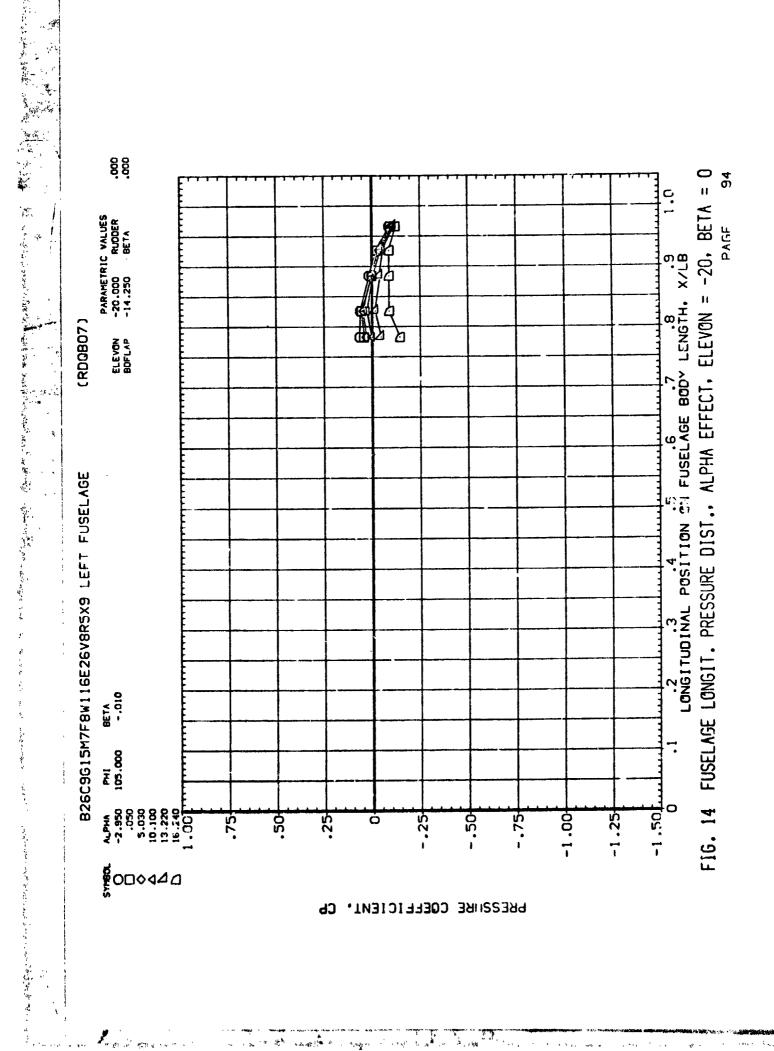


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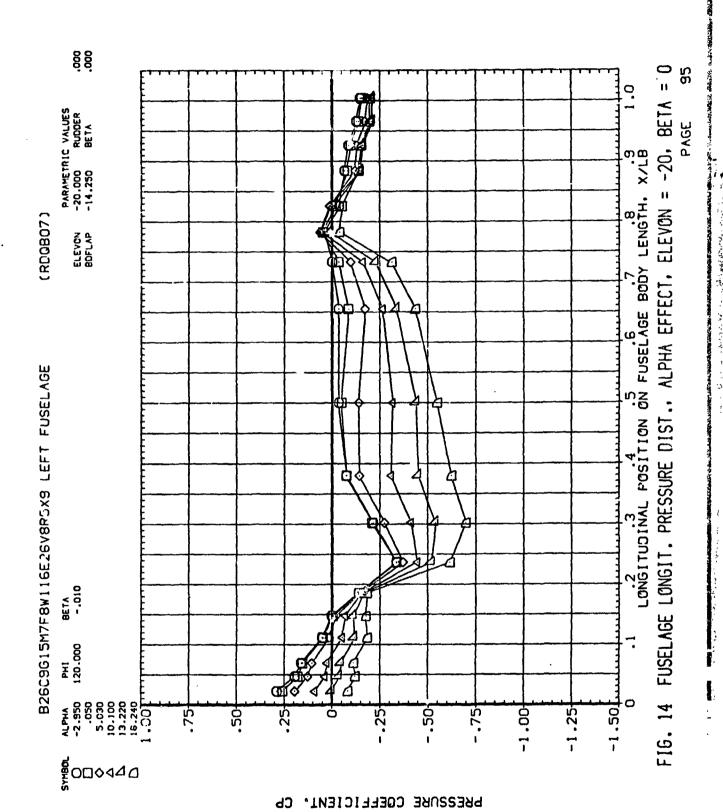


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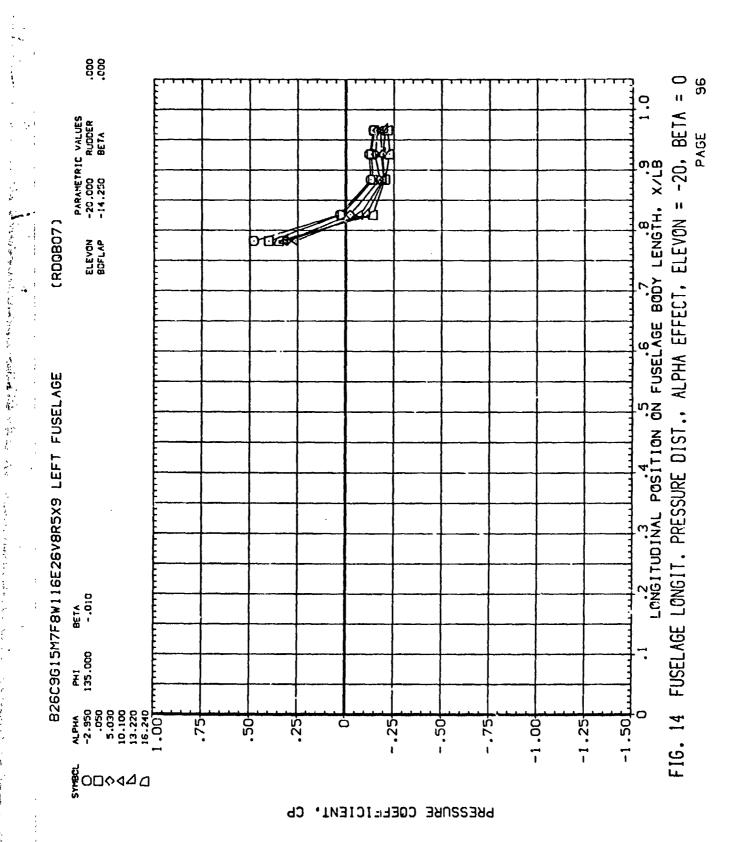
一般のというないれているからいこのないというないというないないというないないないないないないというないないというないできないできないということもなっている

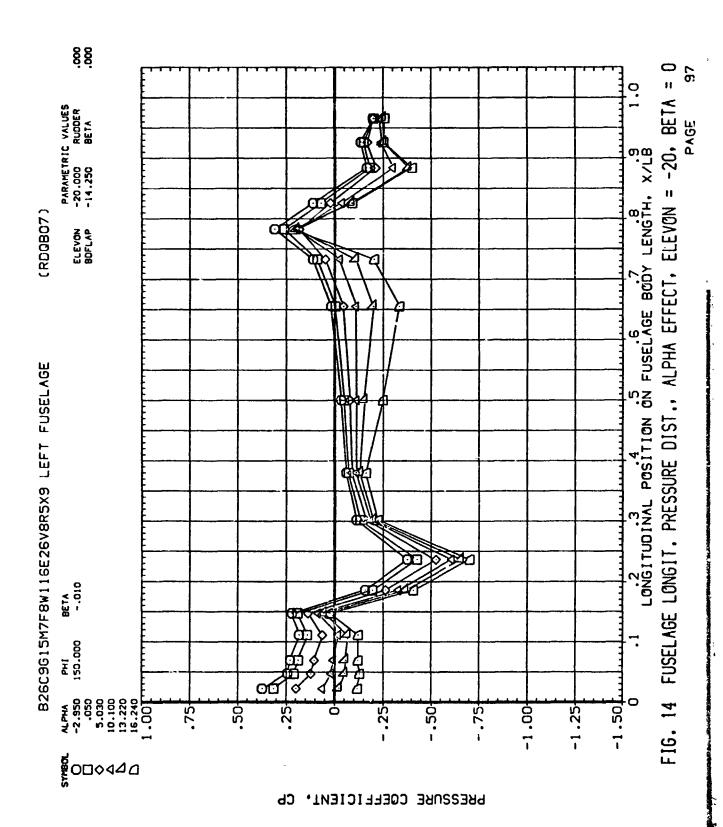


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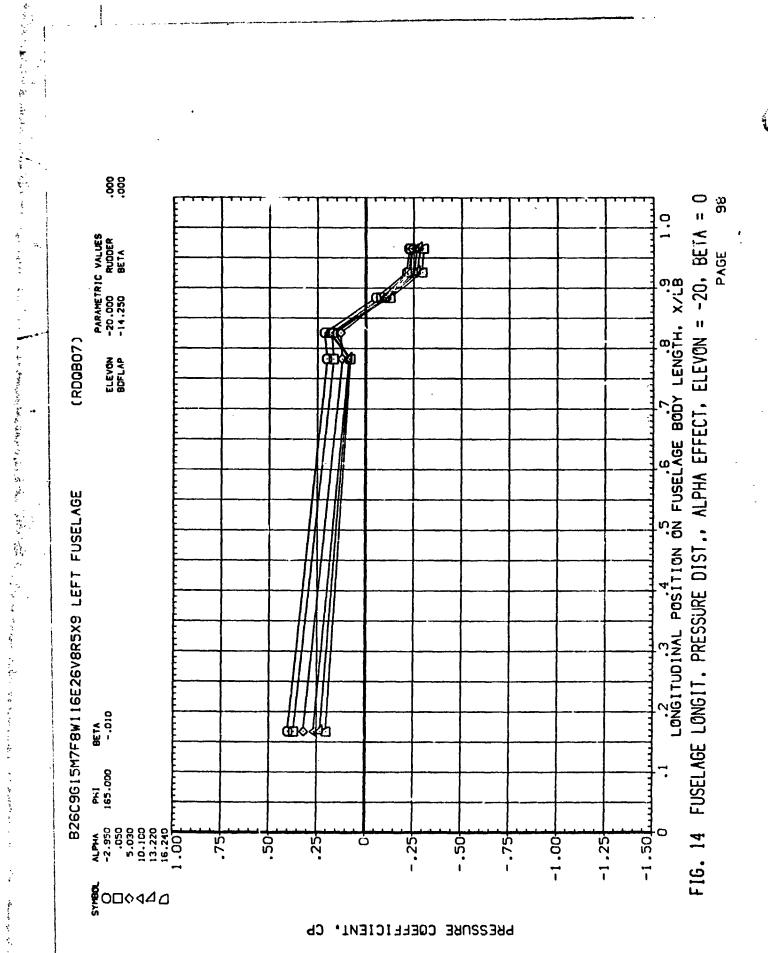
The Maria of the Control of the Cont

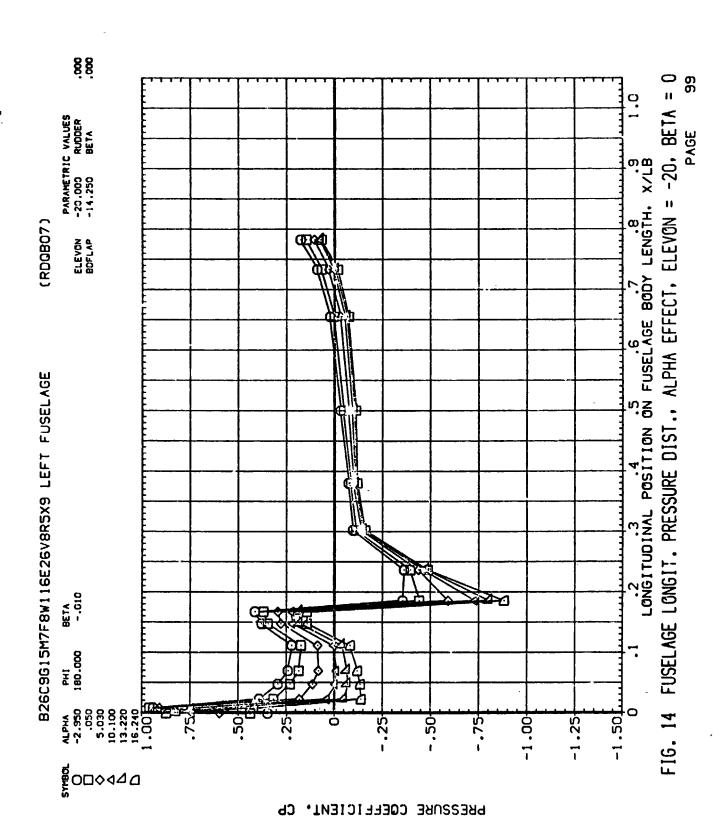
こうちょうてきから かいこうとうしゅん 大きなないかいかい





一番のできないというできないというできない。 まいまい かいかい かいかい からなる からない あいかい あいかん ないない ないない ないない ないない でもないしょうしょう

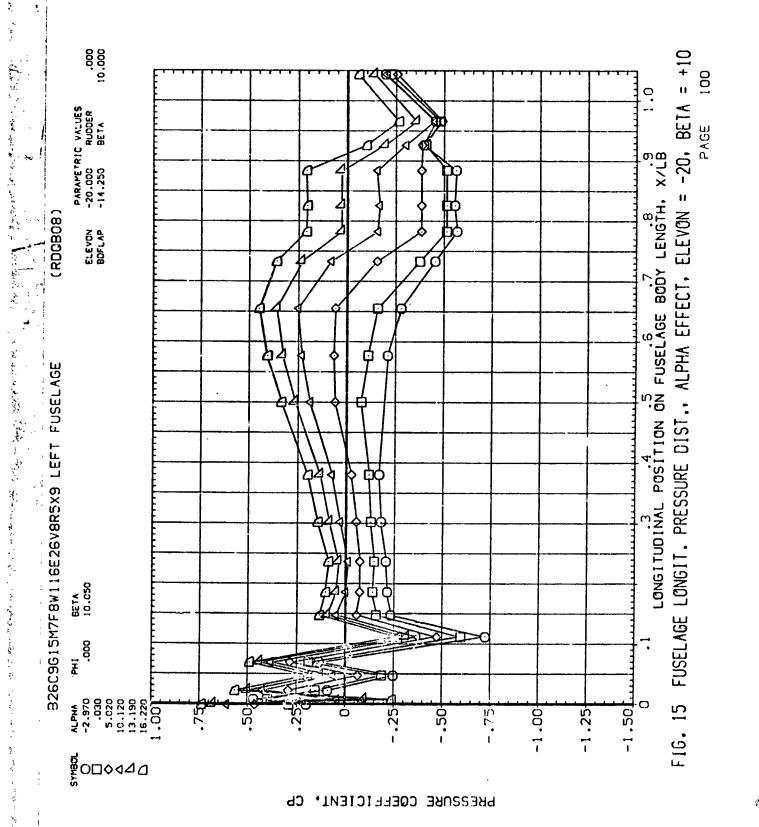


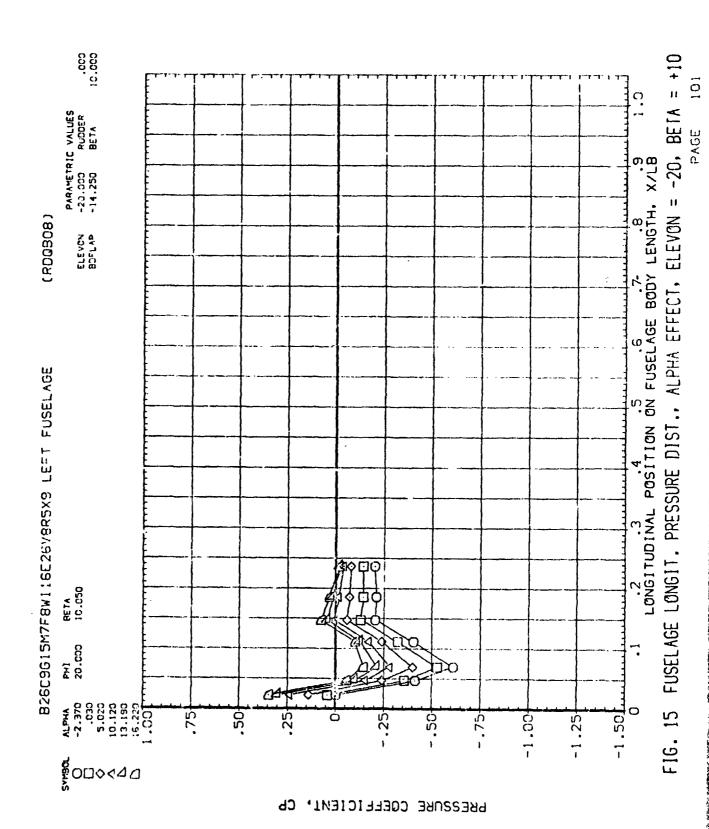


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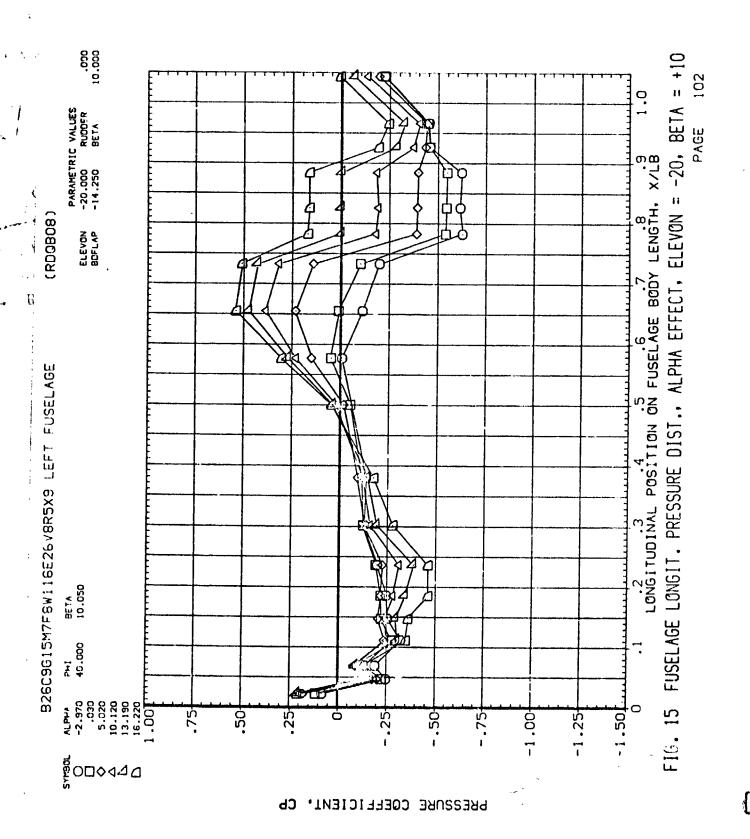
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あってから、それなどのであっていますが、これのながっていないのは、ましかないはませんではないできましていない。





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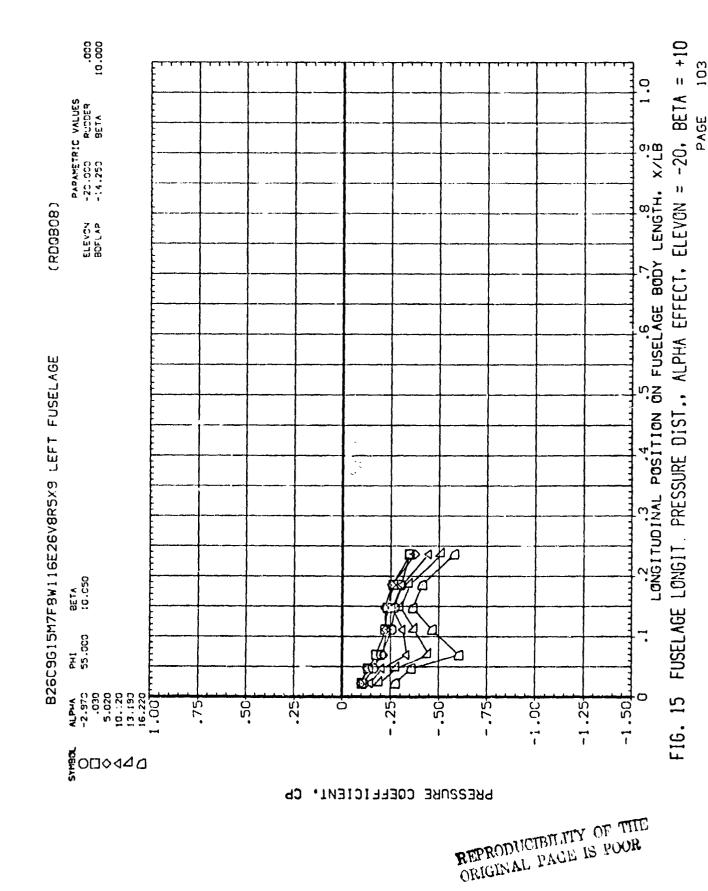


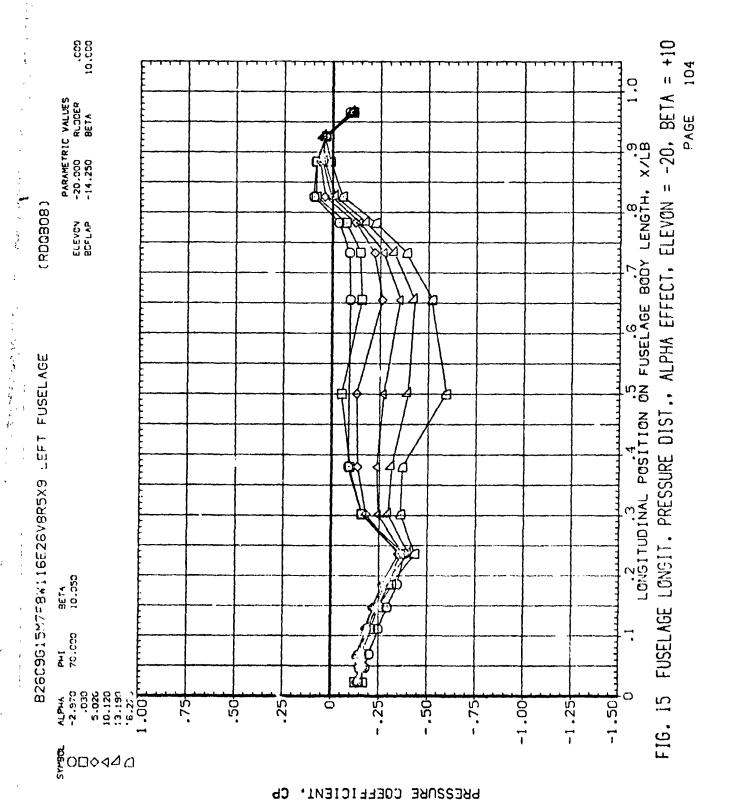
一番とない、からてき、いうないとうできないがられることがないできないできないできないできないできないというできないない

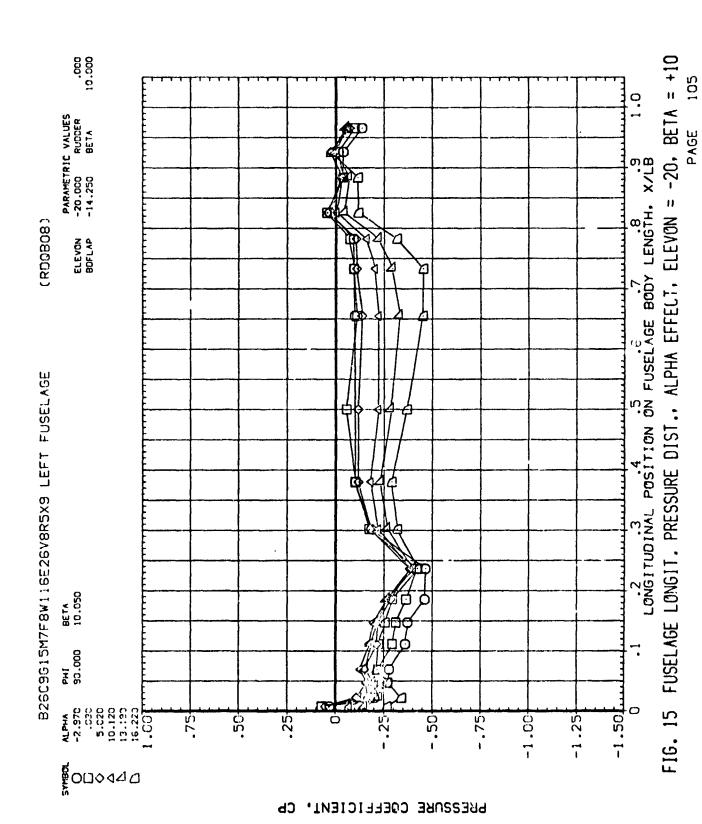
これのないないのであっている かんかんき かんかん かんかん かんかん かんしゅう おしかいかんしゅ あんし かけいもってき

かっていていたことのできないないないないないできるななないないないない

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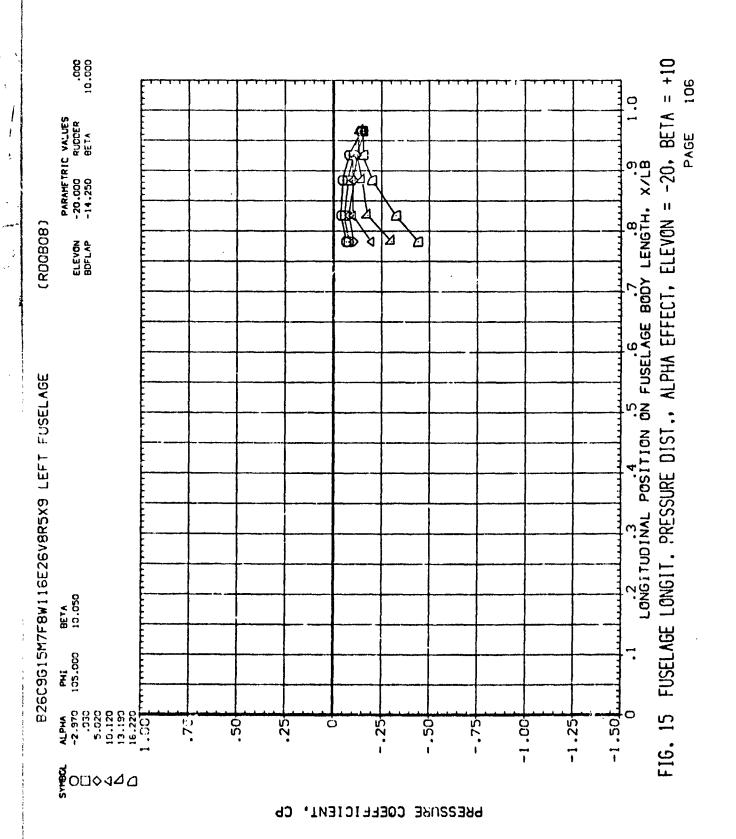


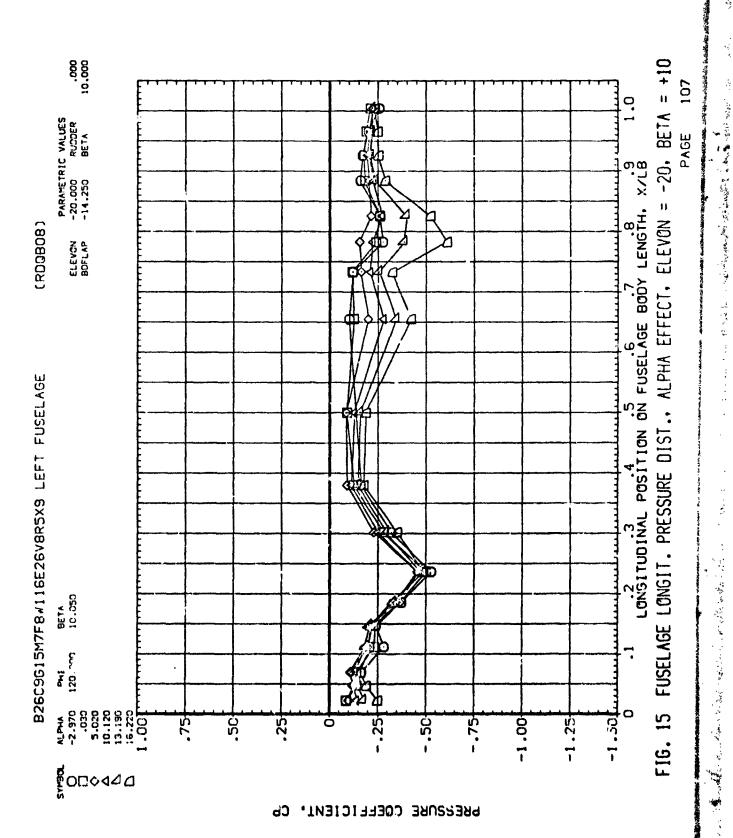


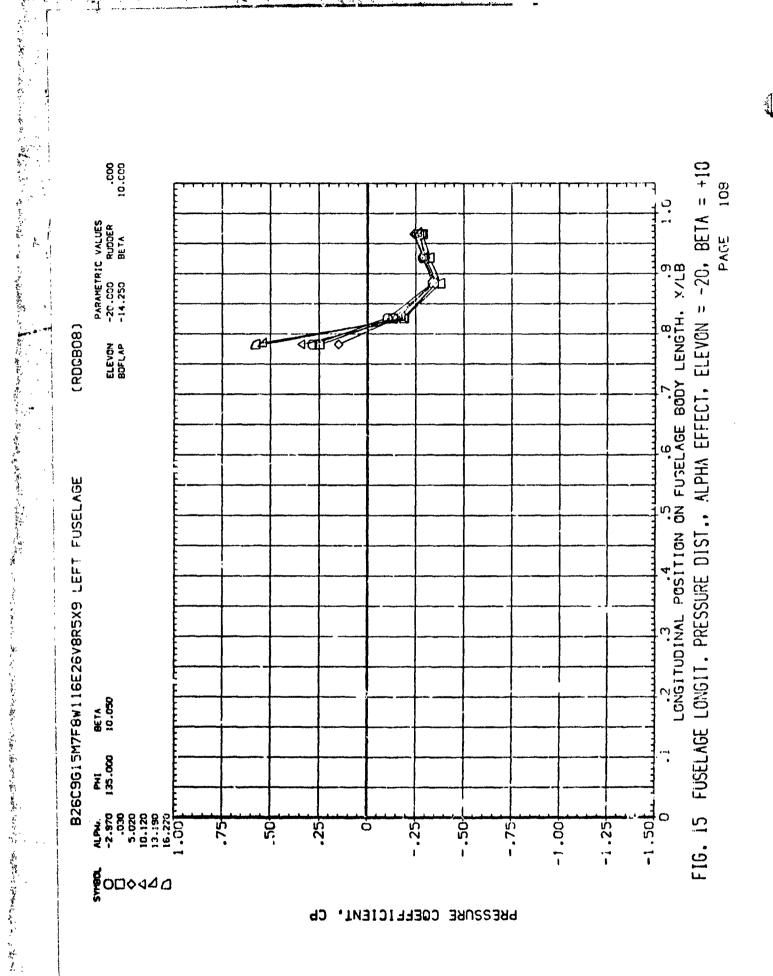


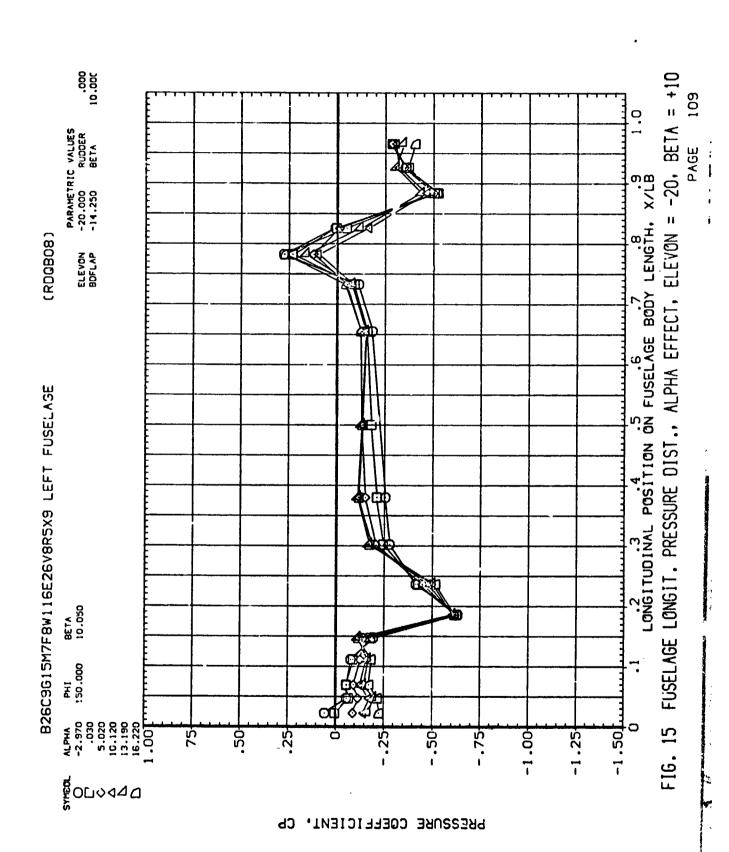
一年 からいていている かいかいこうなかの まっかんかい あいけんかい あっちゅう 一般 あ

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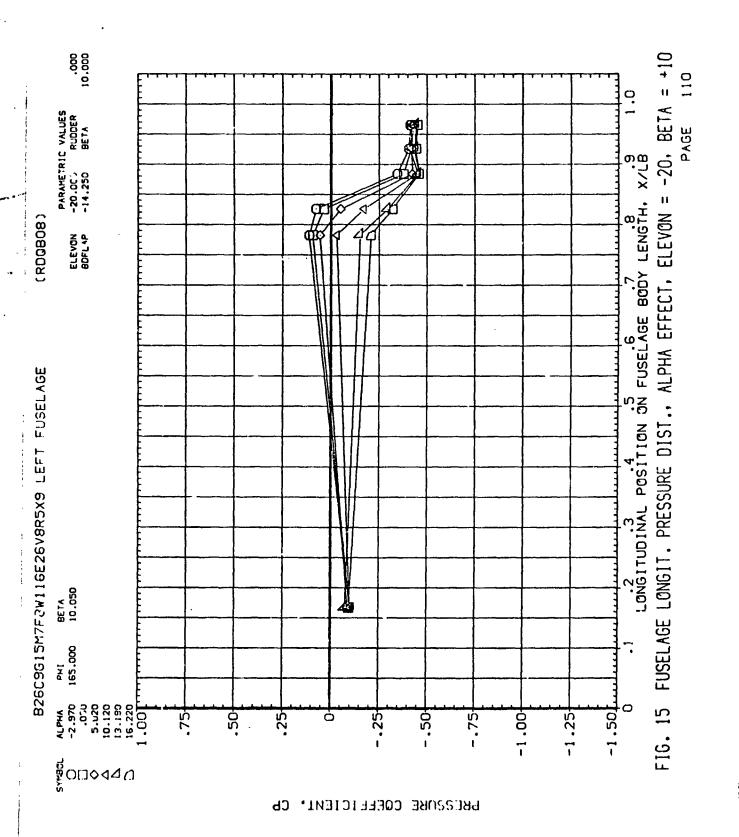






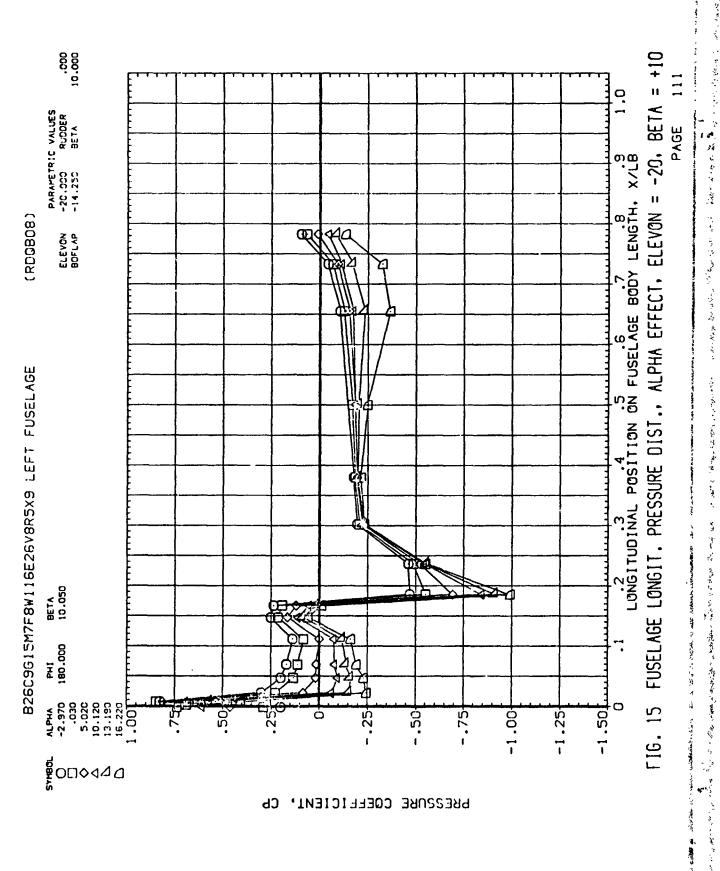


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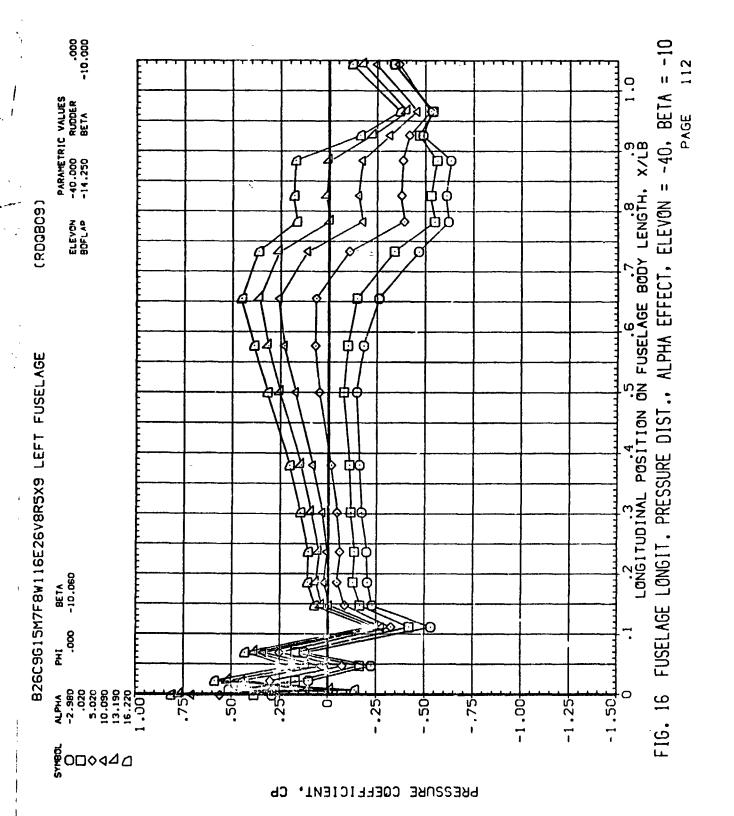
The second secon

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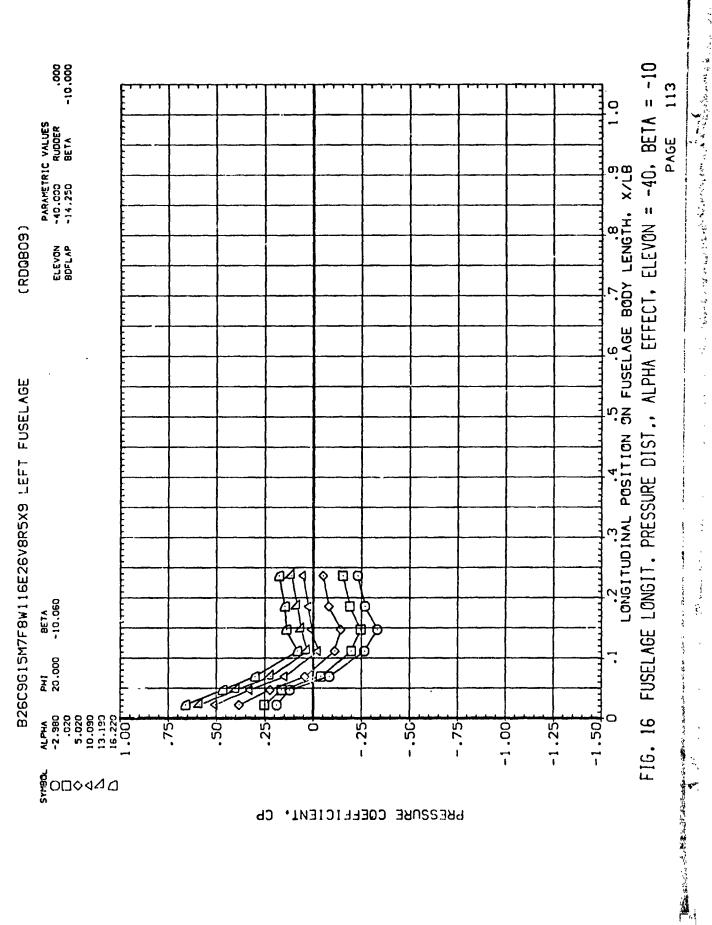
ويجاويها أفكوكم

かんしこう いちをかいいからればなりのうまなないとう



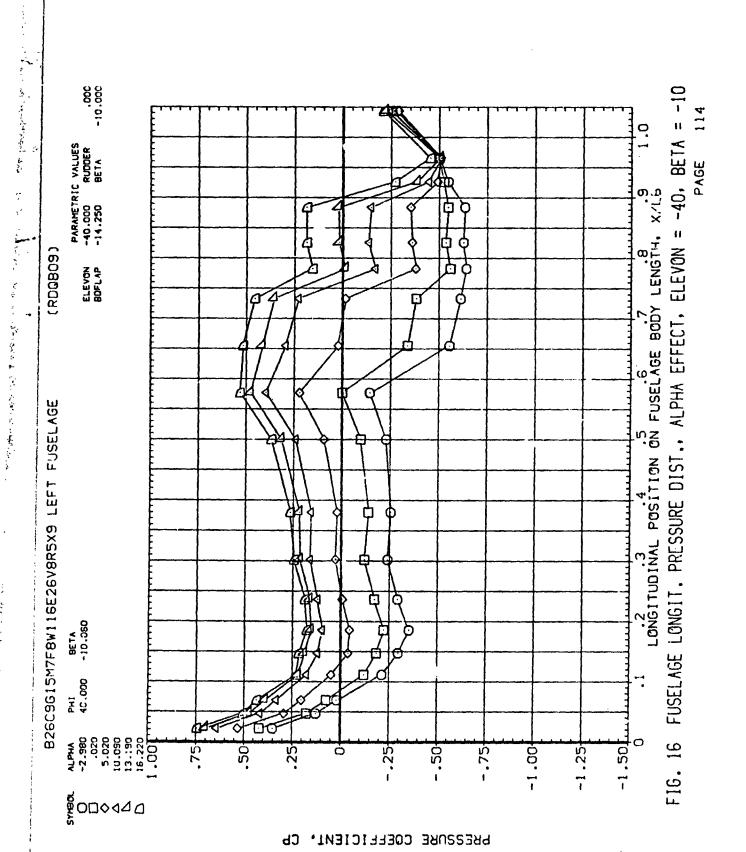
一ていることがいこととのないのでは、あるからないからいこととの

The said the said that the said the

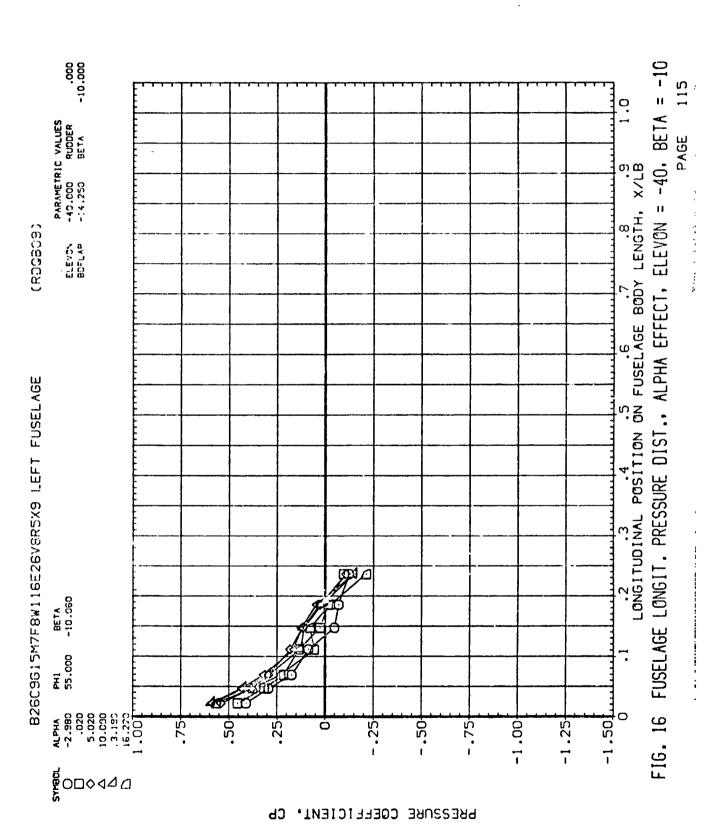


かっていますいかかい かまていていまれてきいかい かきてきいん できょうかん からなる というしょう あんしゅう かんしょう あいしょうしゅい しょうしゅいしょう かんしょう かんしょう かんしゅん 一般の はいかの 医臓をなられる しまかいかい まいきも かんしょうしゅい しょうしゅい

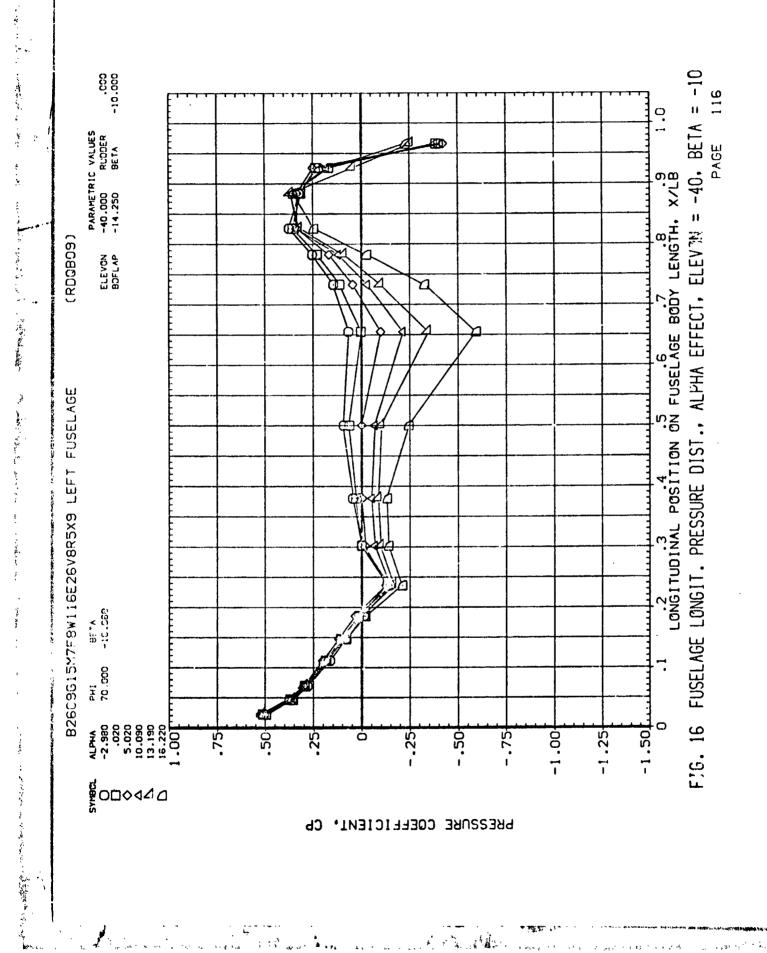
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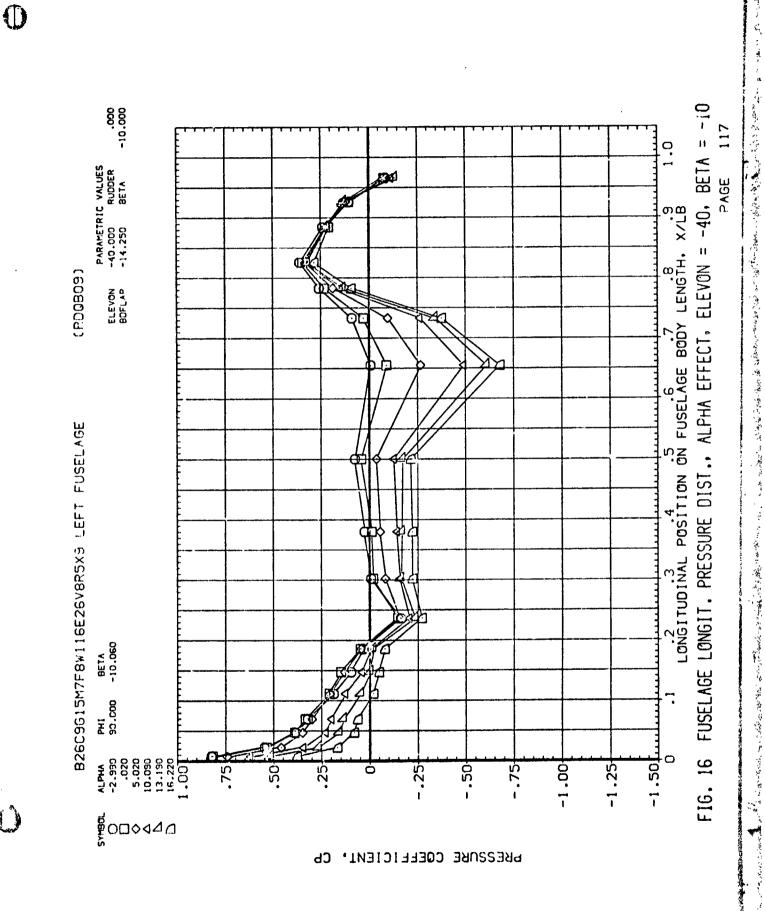
「いっかいとう」のこれのであるからないというできます。



あるというからできないのできないというというないというできないないというには、ないないないできないというできないとなっているというないできないというないできないというできないというというだけられている



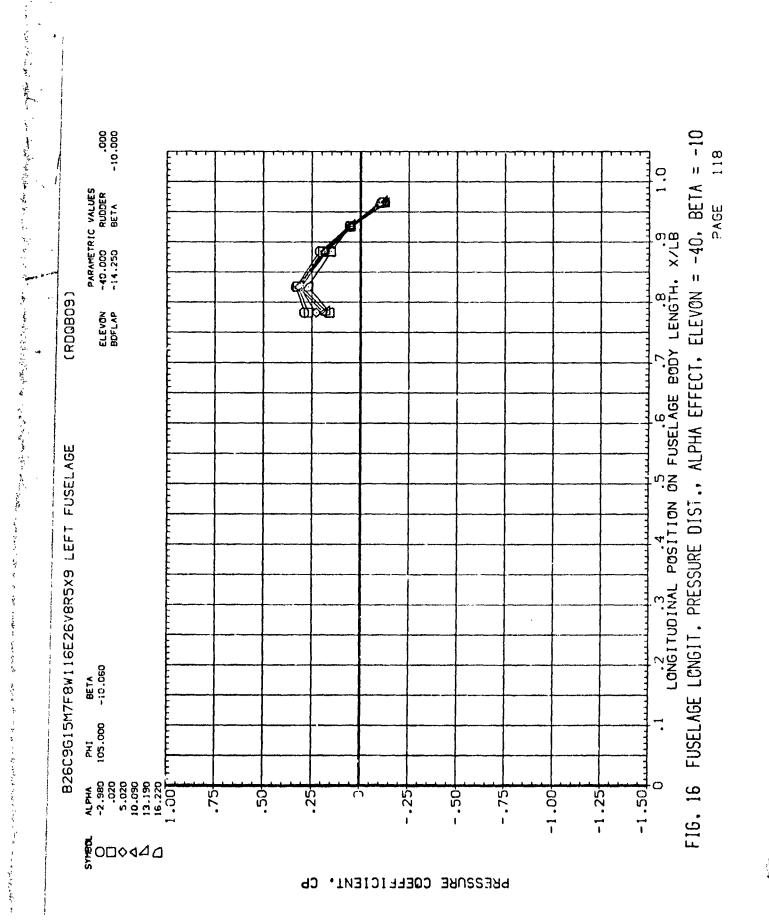
100mm 大七分の 150mm からい 一次流光を発表的報子

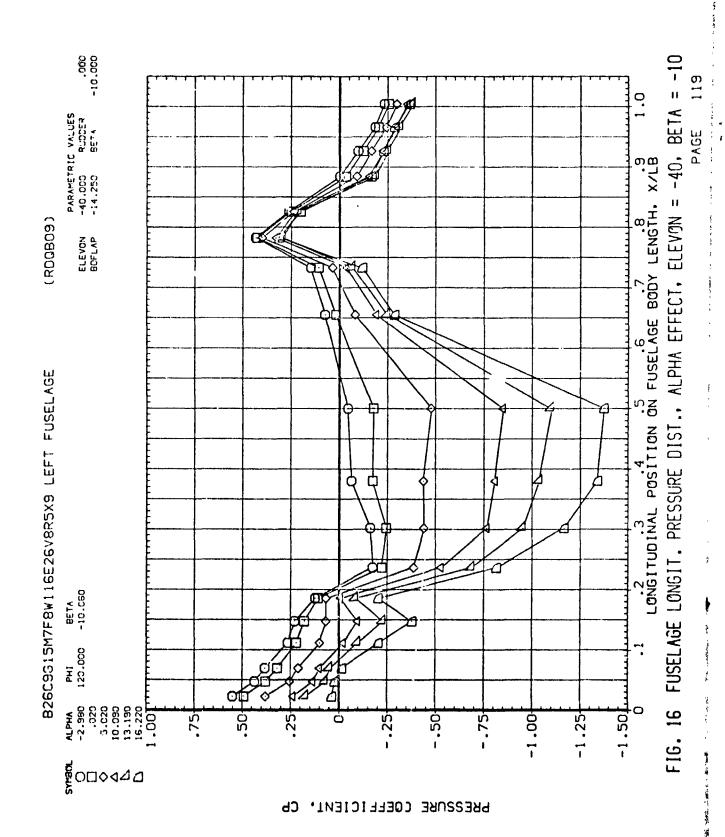


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La Fr.

大学のことできない。これをいることでは、大学のでは、真ないというできないというできませんと、「大学のでは、大学のできないないできないというできないというできないというできます。これでは、これでは、これで

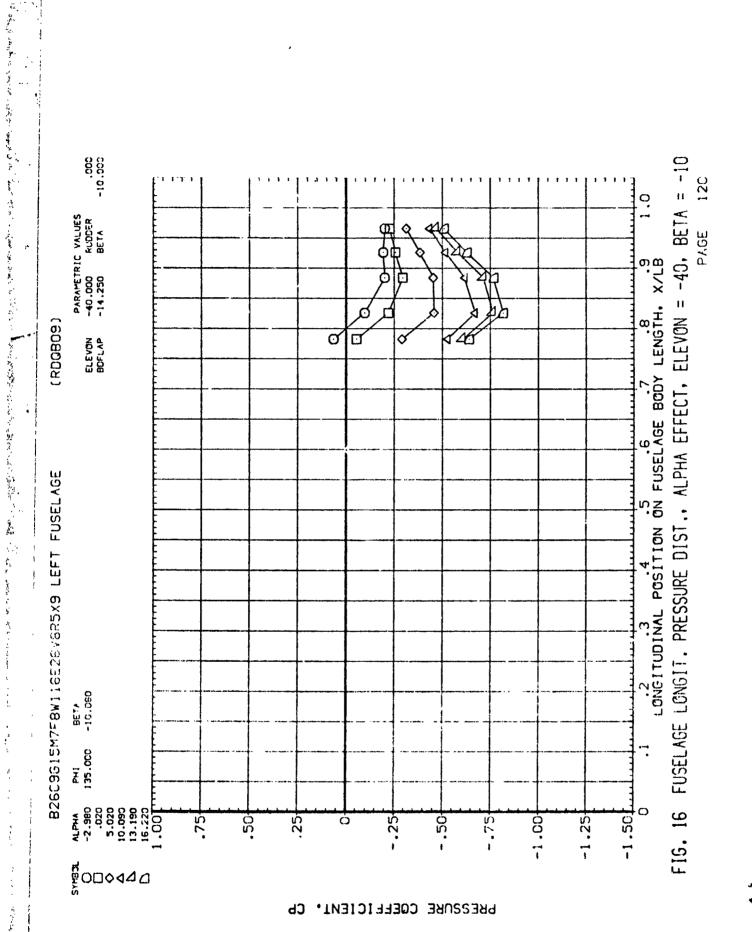


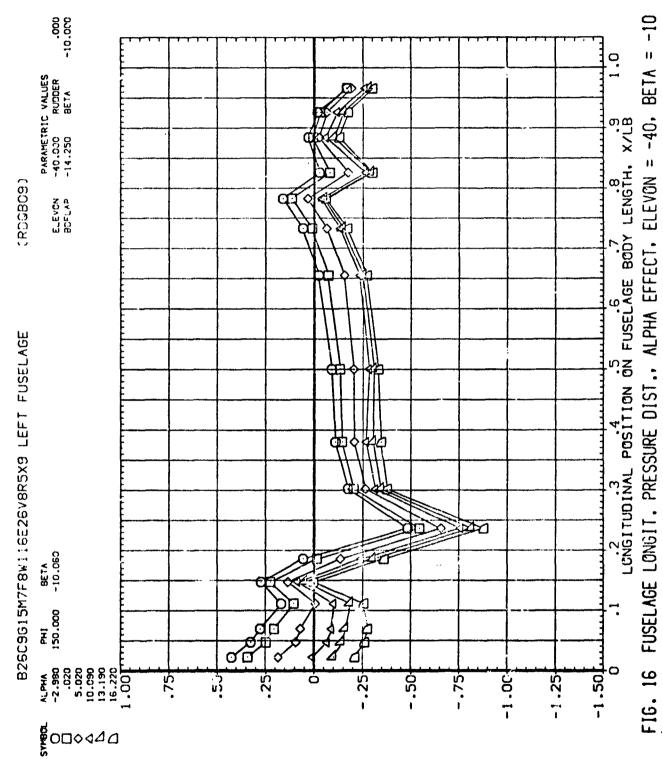


おれないん かんかくさ もち かなっかい 人の間になって はなればない はった あい

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のからのはないのであるのでは、人間であるとうなっていると





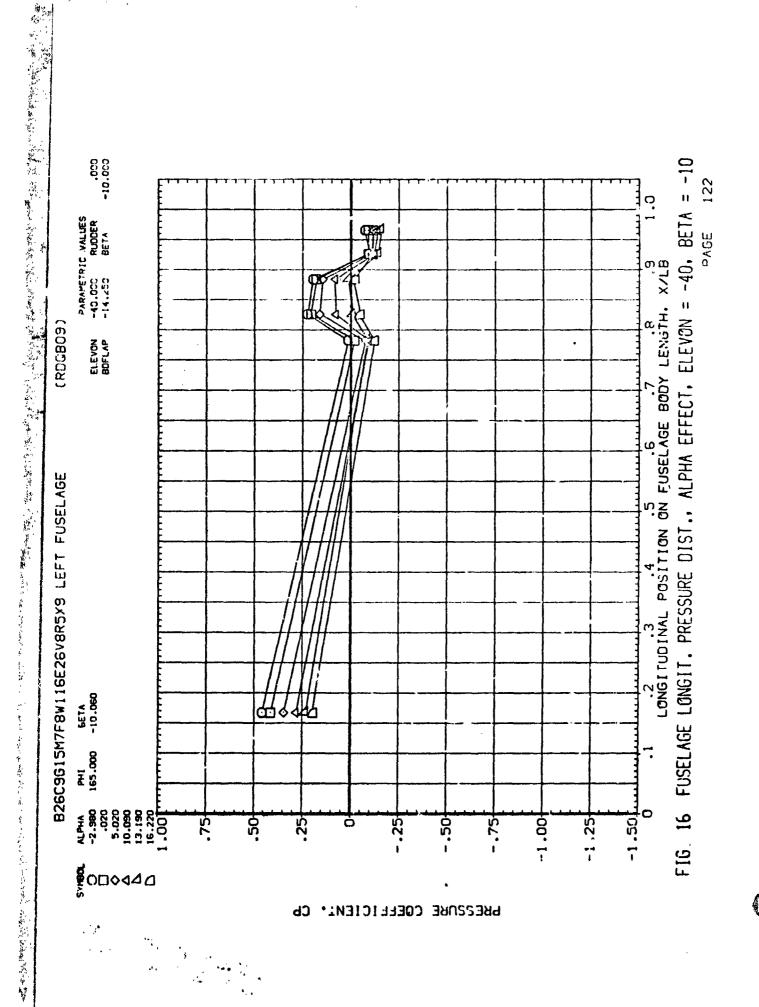
からうてきるからないのであっているというというというないというないできませんから、これのからなるとはないのというないというないというないというできませんというできま

こうことということ 人のとから

PRESSURE COEFFICIENT, CP

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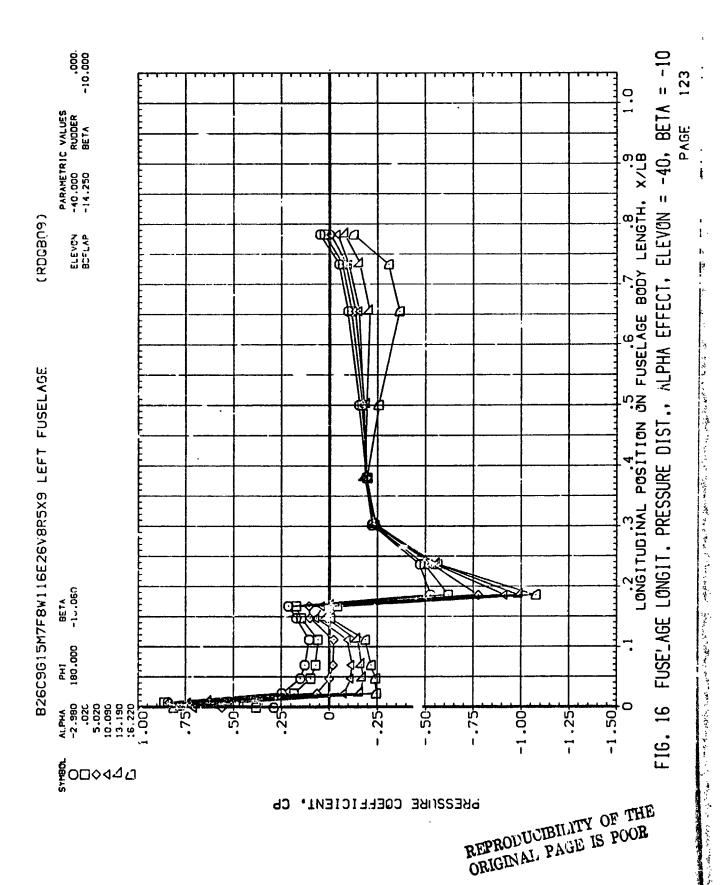
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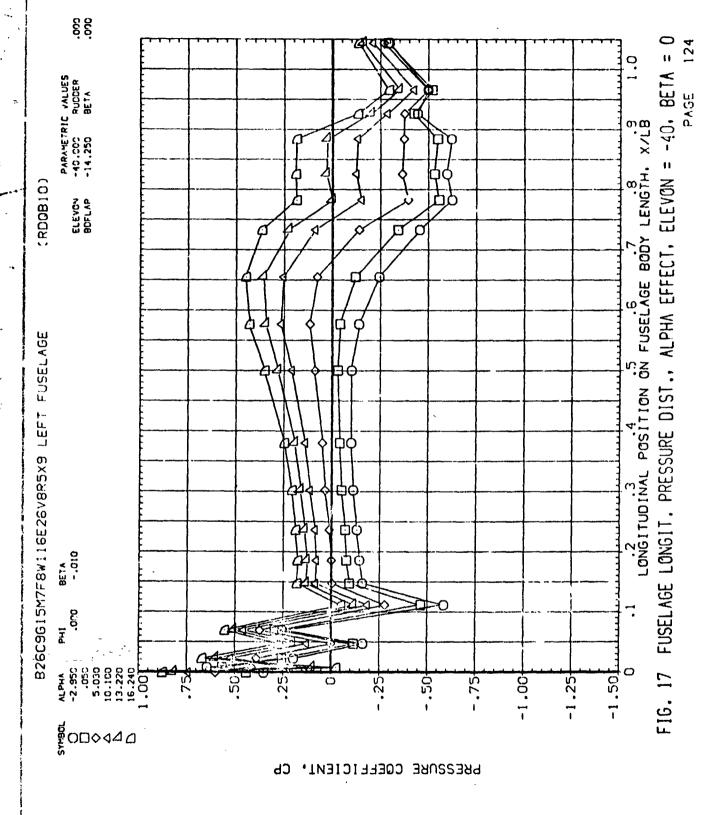
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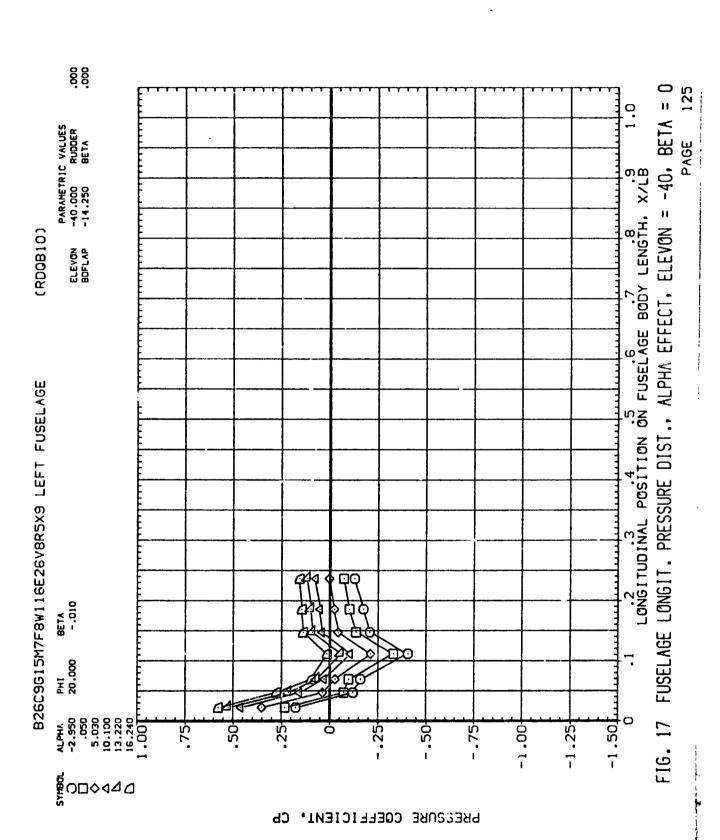


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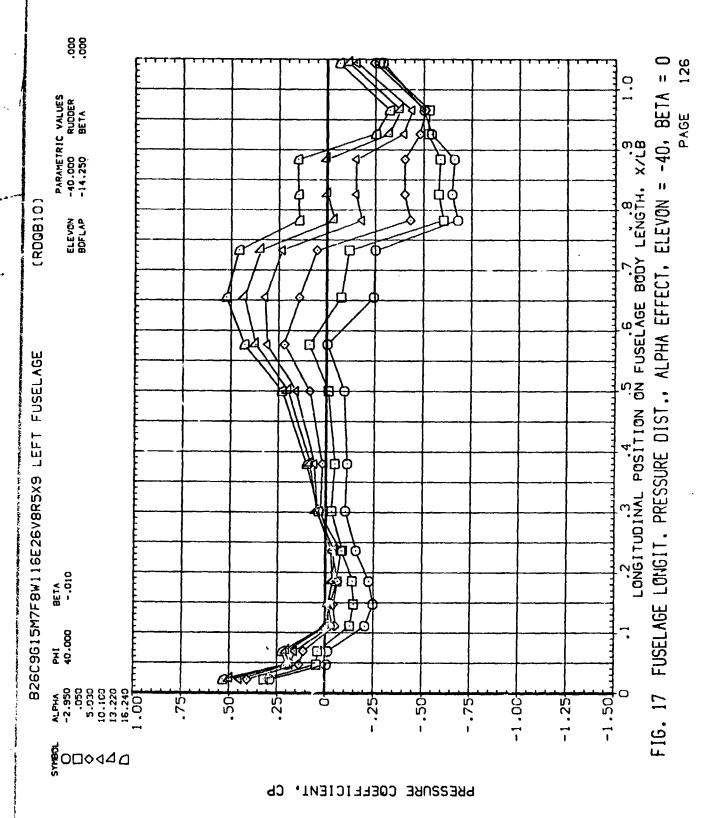
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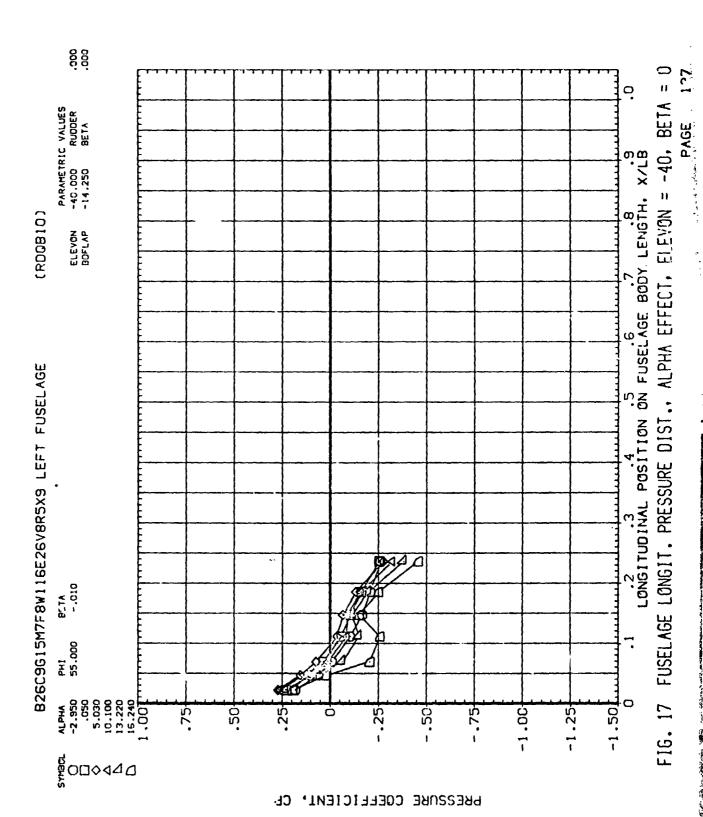
I Commission and the sign of which will be

「おかいか、うれいかいいいのはないないないないない。 あいればないない もんしない あいない

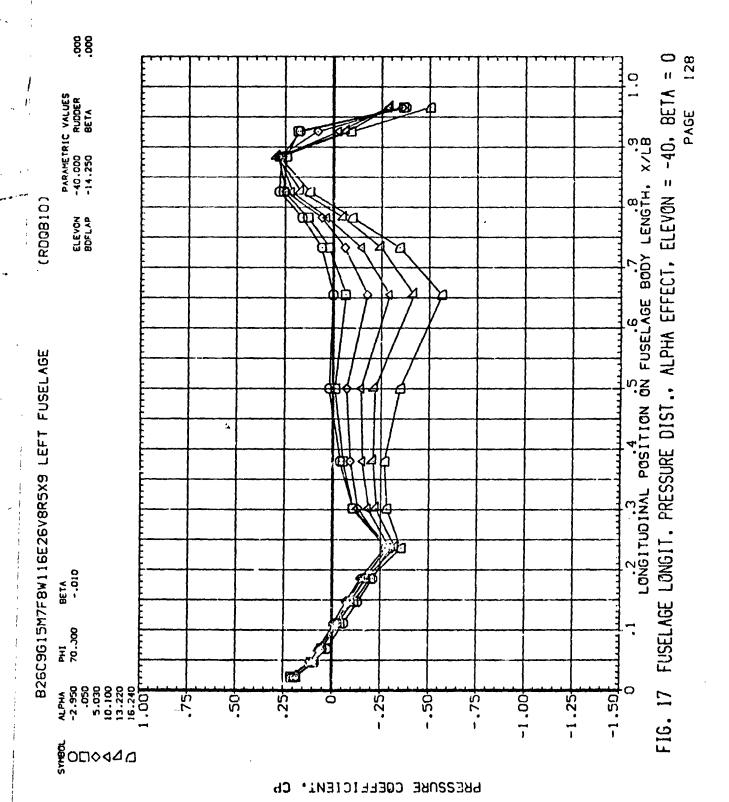


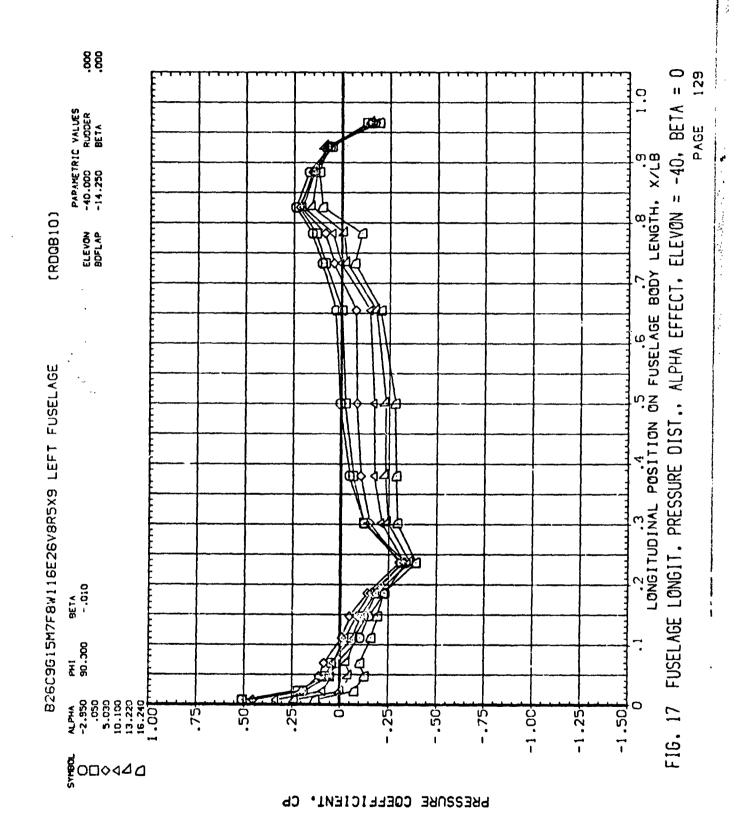
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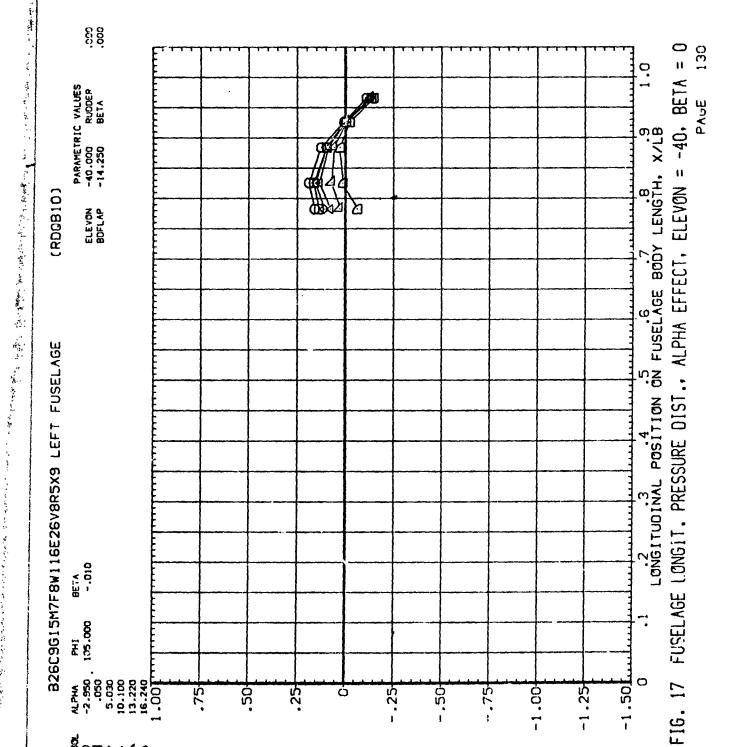
ではなる かけんの これできょう しんかい とかった かんかい とはくないかん かんかん かんかんかん かんかん かんしゅうしゅう これではない はっている これになっている これになる かっとう かんかん かんかん かんかん かんかん しんしょう しゅうしゅう これになっている これになってい これになっている これにない これになっている これにない これにない

これのからないできて、これでは、これはあります。 あかない かっぱい あまれて きょうしょう かんない ないないしゅう

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PRESSURE COEFFICIENT,

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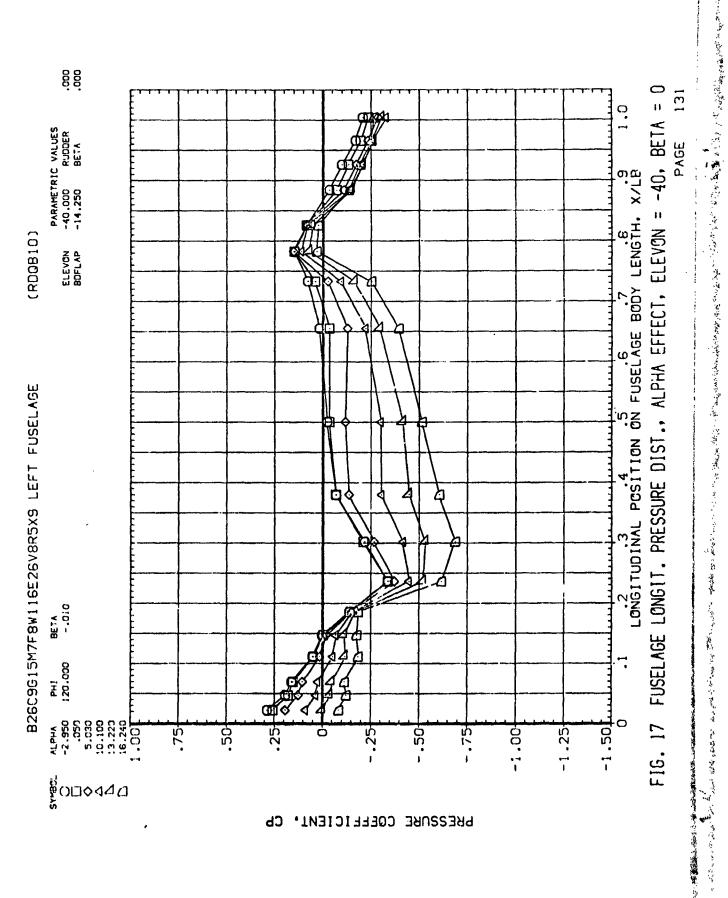
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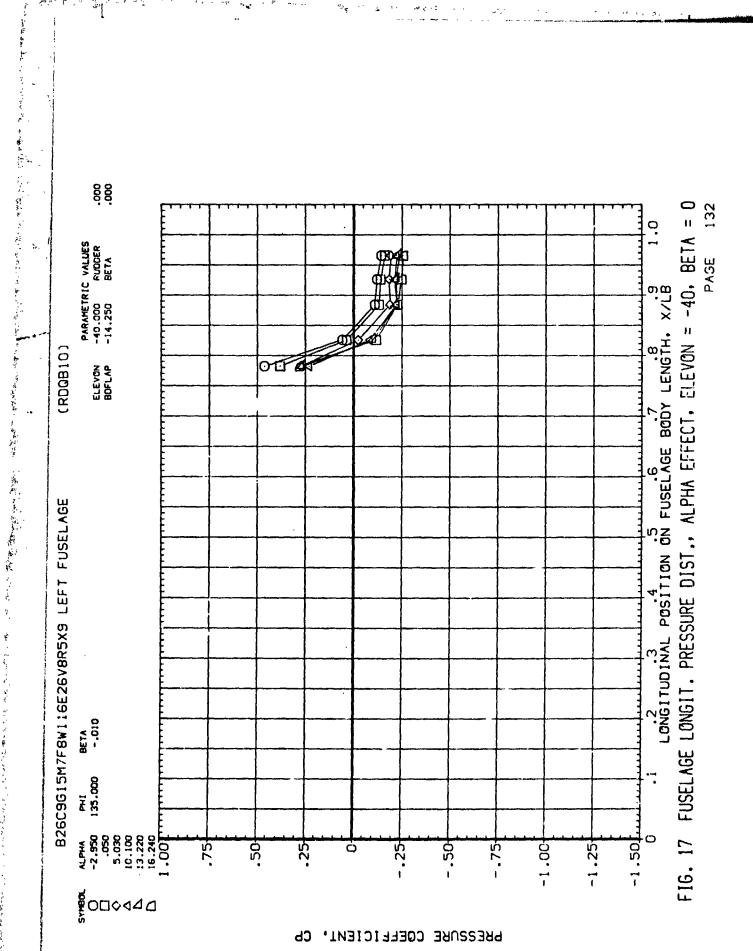
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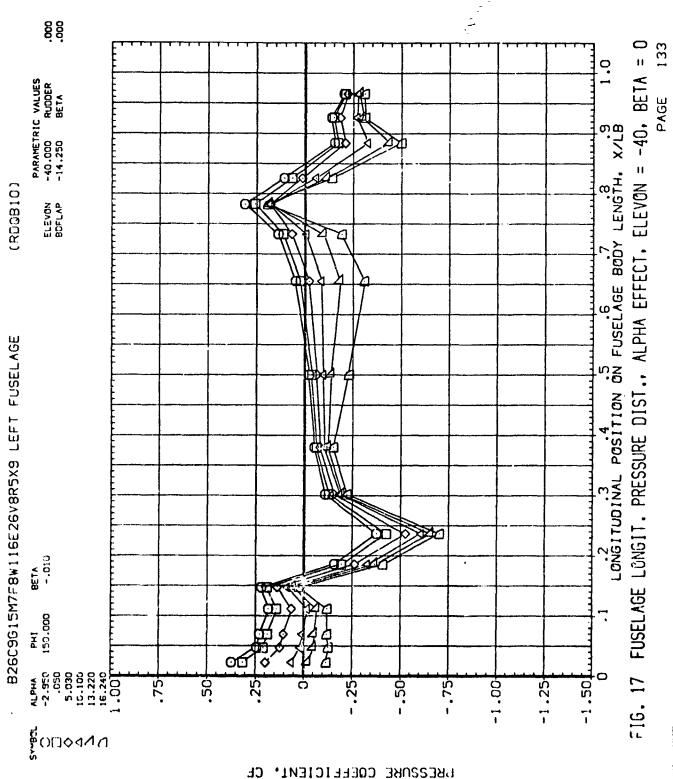


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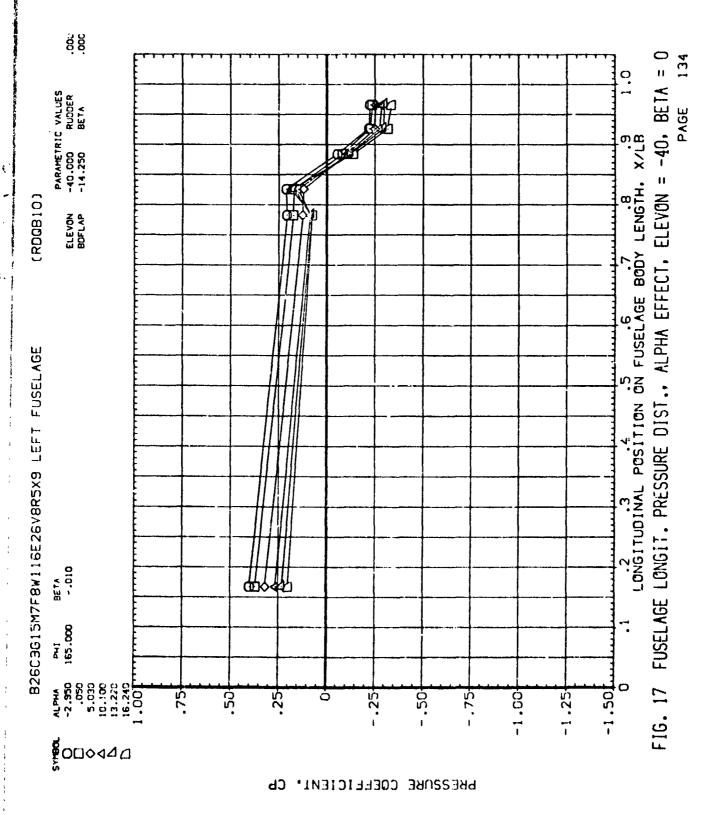
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これが行るところと、見るちとして記したいませんという、愛いないないないないないないであれない

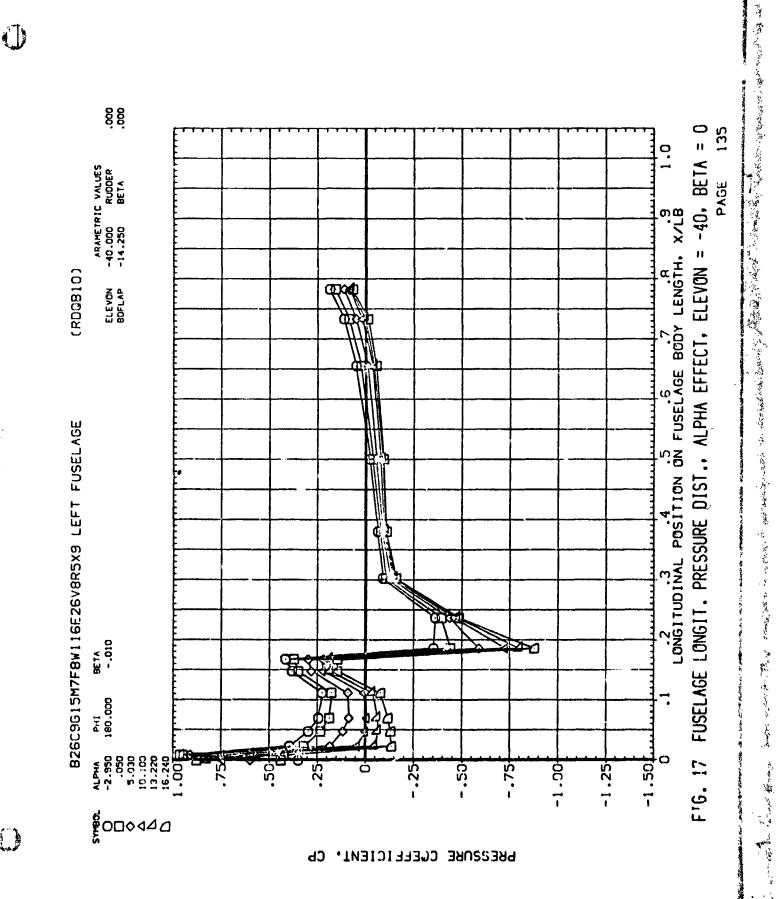




いいかき これがきからいく こうちゅう こうじんきょう いんきゅう かんしょう できぬ ちゃん いまかな しゅうかい かんかい かんきゅうかん きゅうかん こうしゅう なんしゅう しょうし



おかい かいことがいる はんかいかん いっこうかいかい こうがない かきかい 一年を持ちなるといか



January L. J.

一番の一人の一人の人があります。 から 一日間 のでき ないかん かんかん かんかん 一人なる あしかがら あまんないかん なっしんかいがく しんしゅかんしん

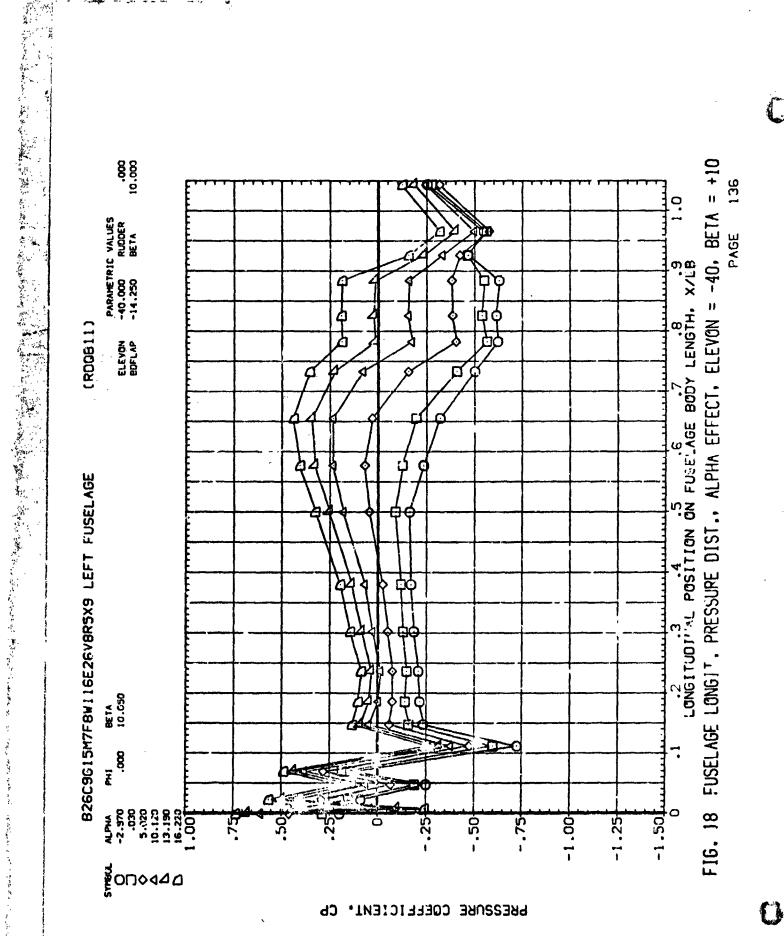


FIG. 18 FUSELAGE LONGIT. PRESSURE DIST., ALPHA EFFECT, ELEVON = -40, BETA = +10 .00.00 00.000 PARAMETRIC VALUES -40.000 RUDDER -14.250 BETA LONGITUDINAL POSITION ON FUSELAGE BODY LENGTH, X/LB i (RDOB11) ELEVON BOFLAP B26C9G15M7F8W116E26V8R5X9 LEFT FUSELAGE BETA 10.050 PHI 20.000 ALPHA -2.970 .030 5.020 13.190 16.220

PRESSURE COEFFICIENT,

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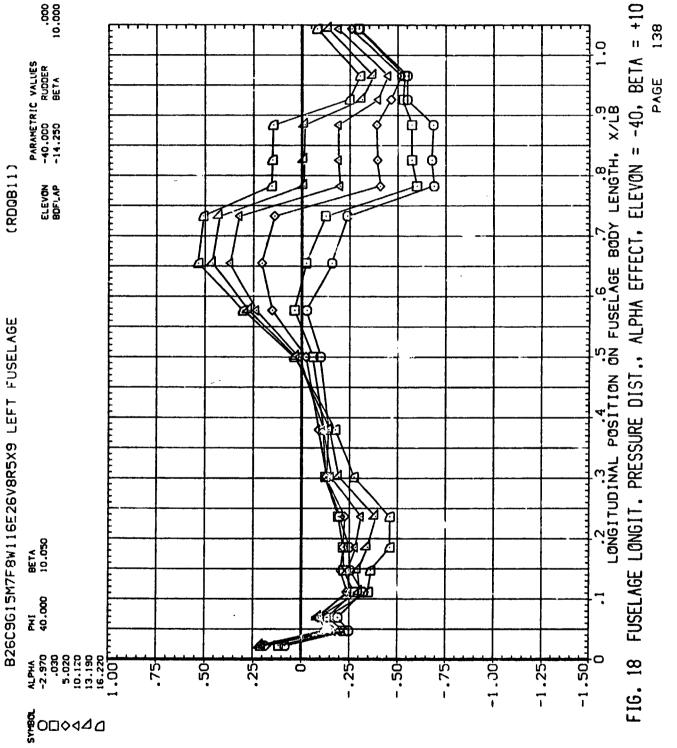
-.50

-1.25

-1.50

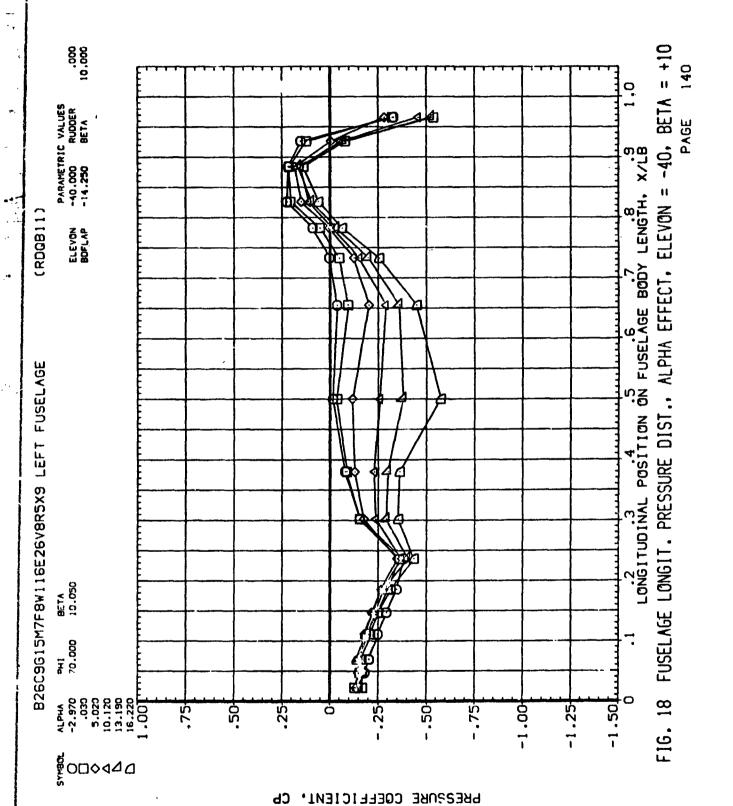
いてる これない とないのである

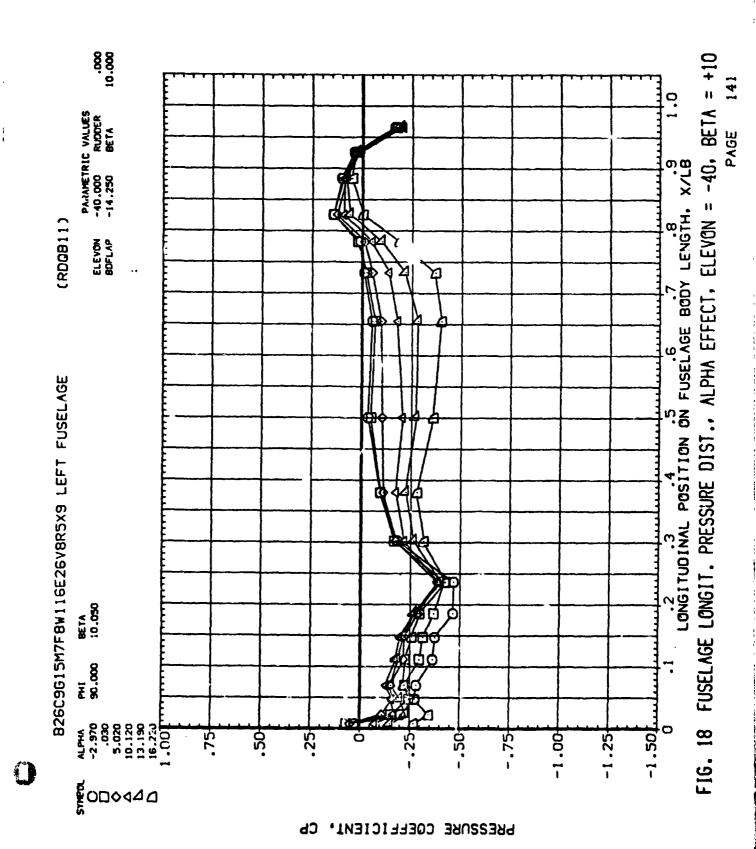
不是我们的人,我们也是有一个人的,我们的人的人的人的人的人的人的人,也不是有一个人的人的人的人的人的人,也不是一个人的人的人的人,也是一个人的人的人,也是一个人的人的人,



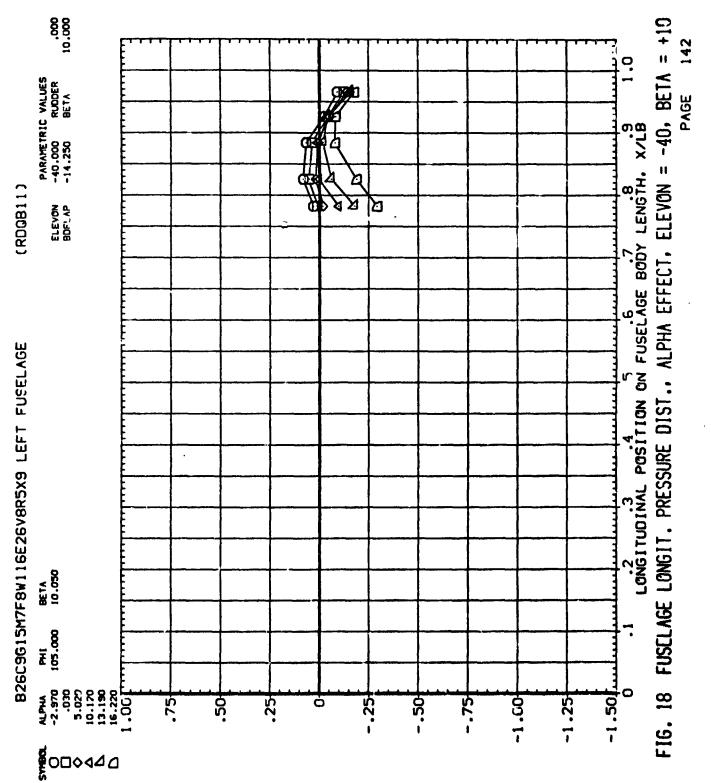
PRESSURE COEFFICIENT, CP

PRESSURE COEFFICIENT, CP





こうかん あいかんかん かんかいかん とうえんご はなってんかいかんだいこうしゃ かいとなる なる

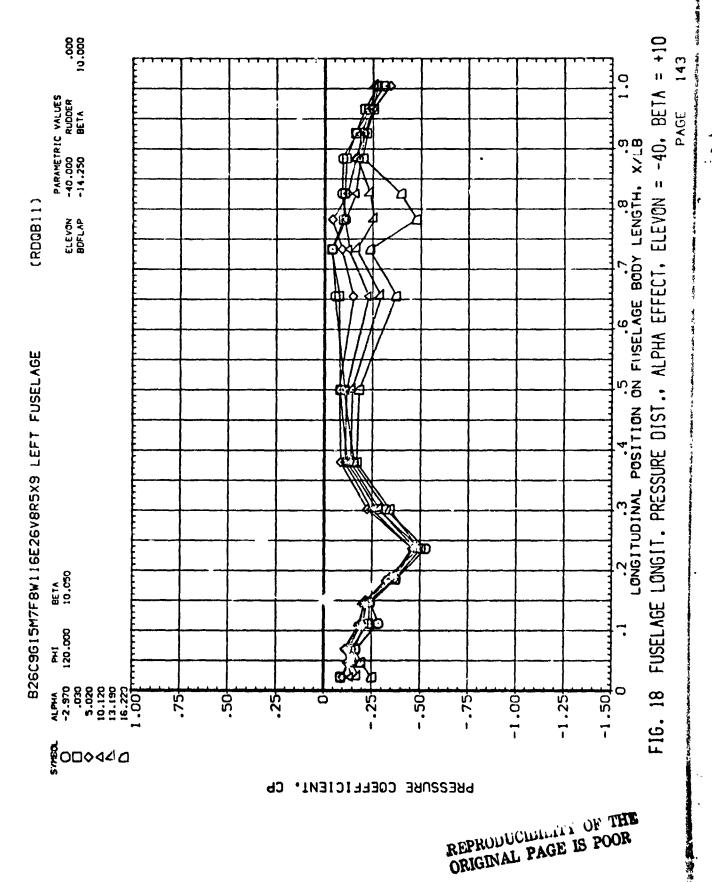


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PRESSURE COEFFICIENT.

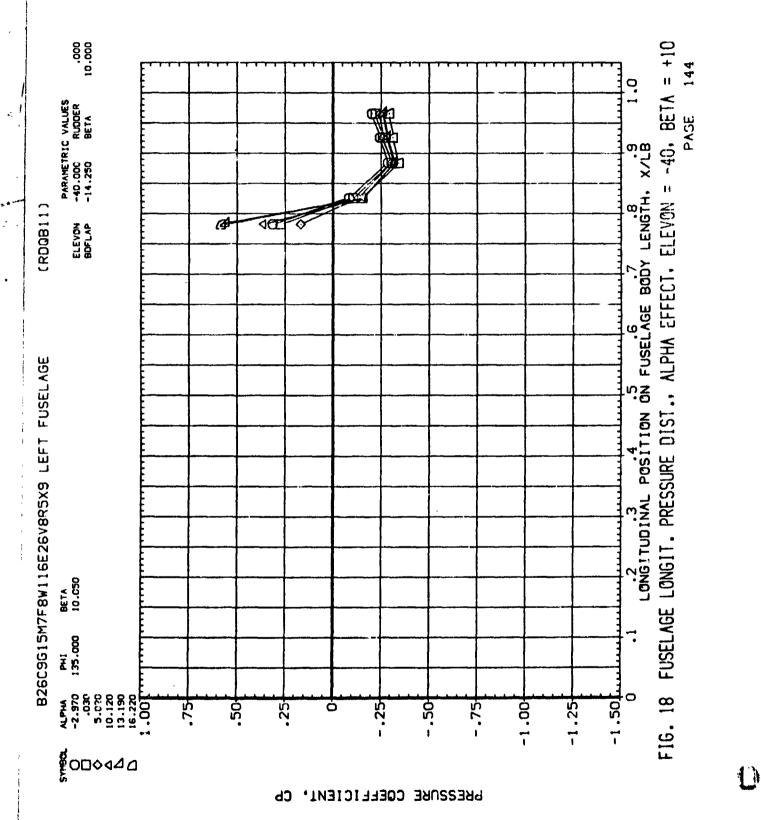
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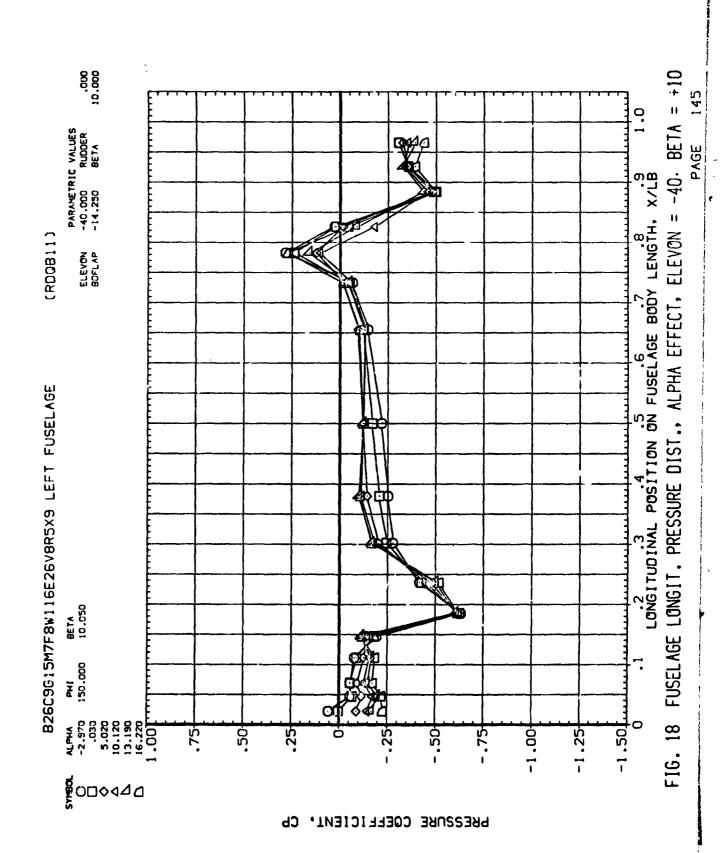
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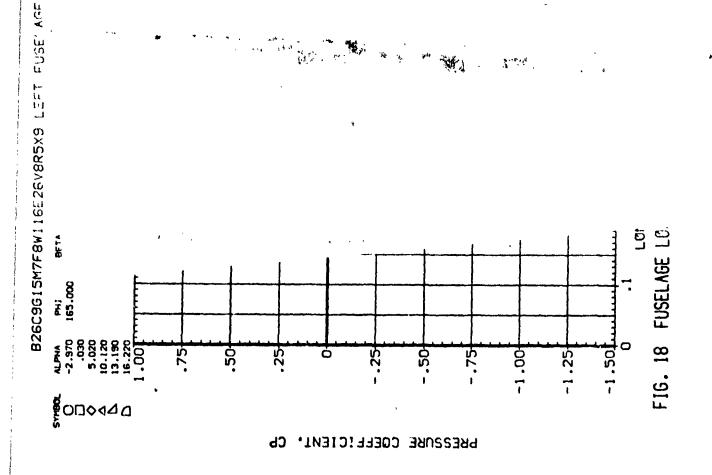


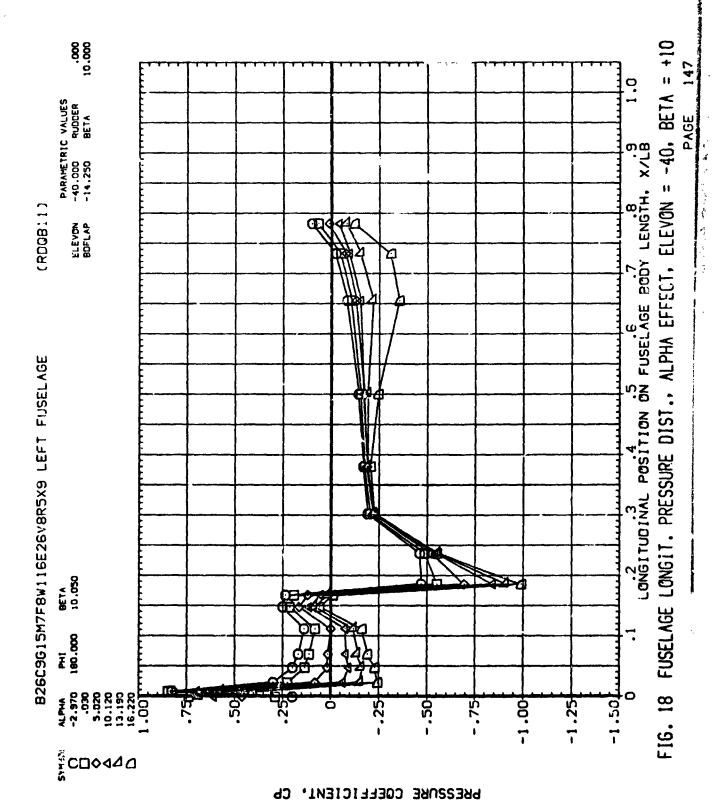
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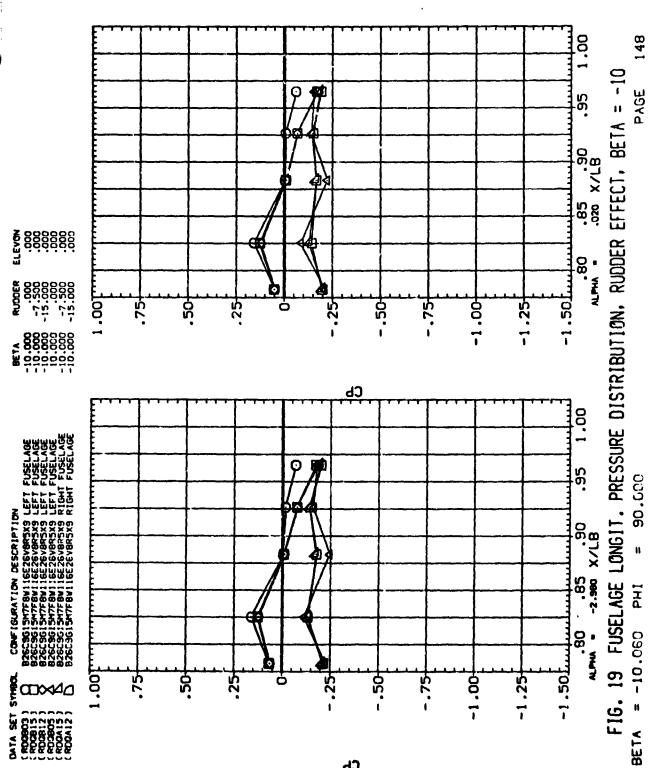




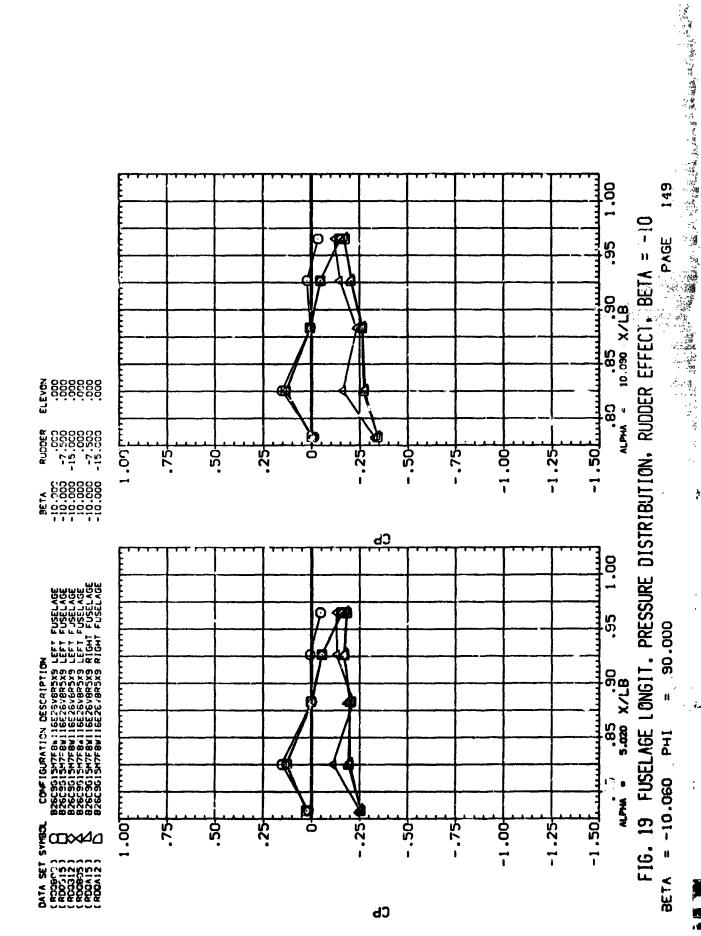


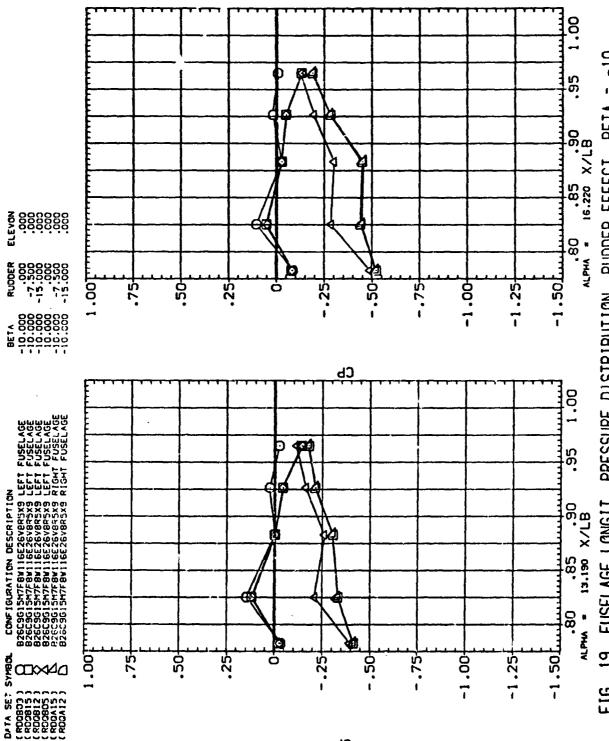


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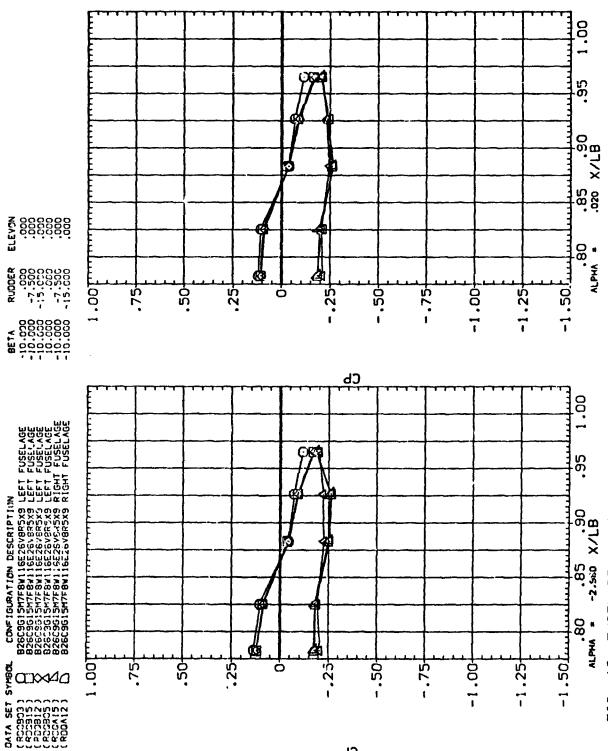
150 FIG. 19 FUSELAGE LONGIT. PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = -10 PAGE 90.000 BETA = -10.060 PHI

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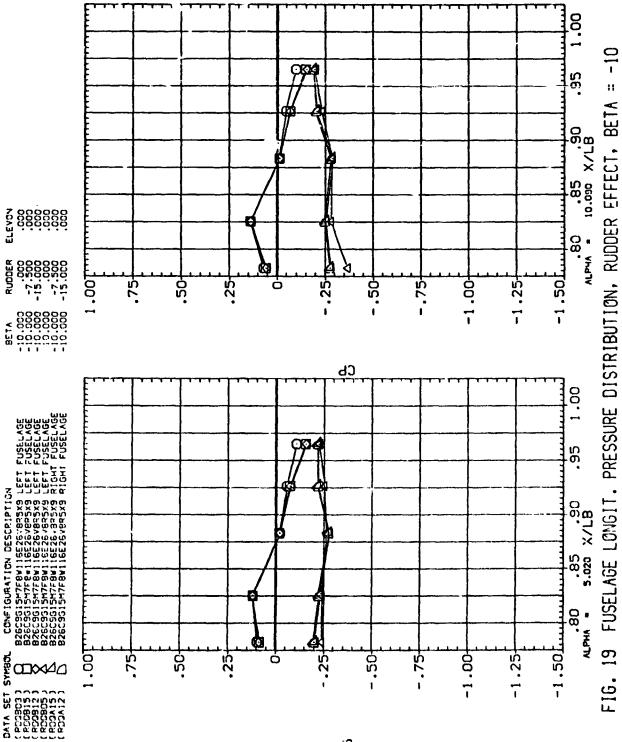


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FIG. 19 FUSELAGE LONGIT, PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = -10 PAGE = 105.000 IH_d 3ETA = -10.060

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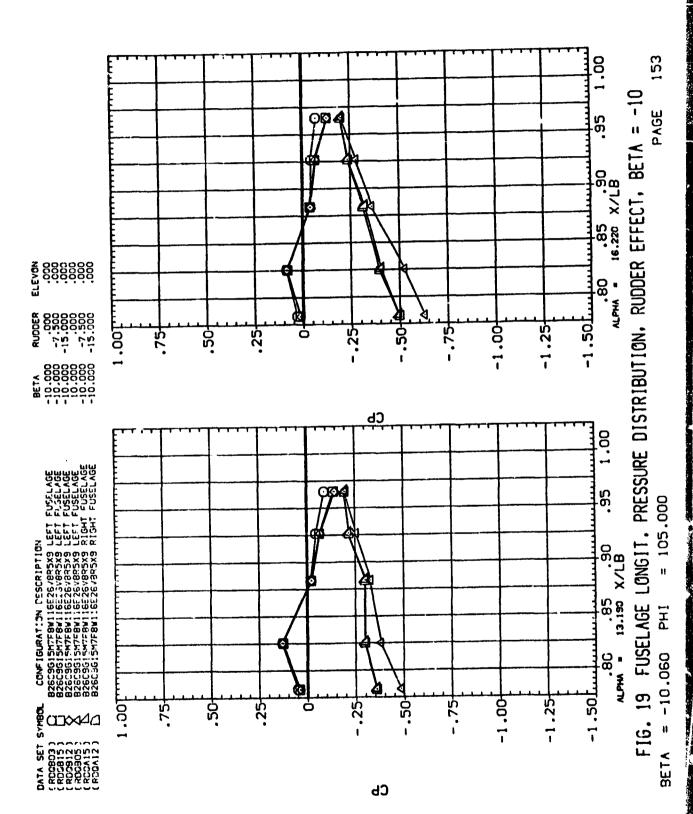
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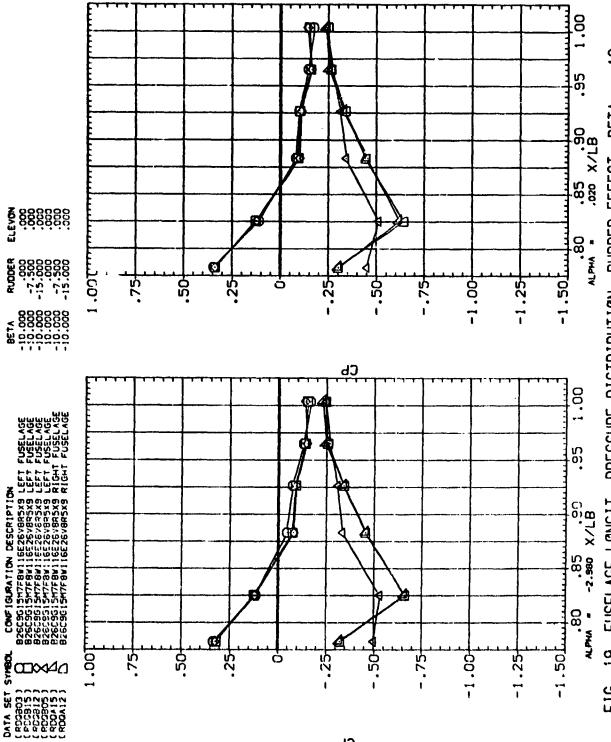


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152 PAGE = 105.000 -10.060 BETA

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154 FIG. 19 FUSELAGE LONGIT. PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = -10 = 120.000D I -10.060 BETA

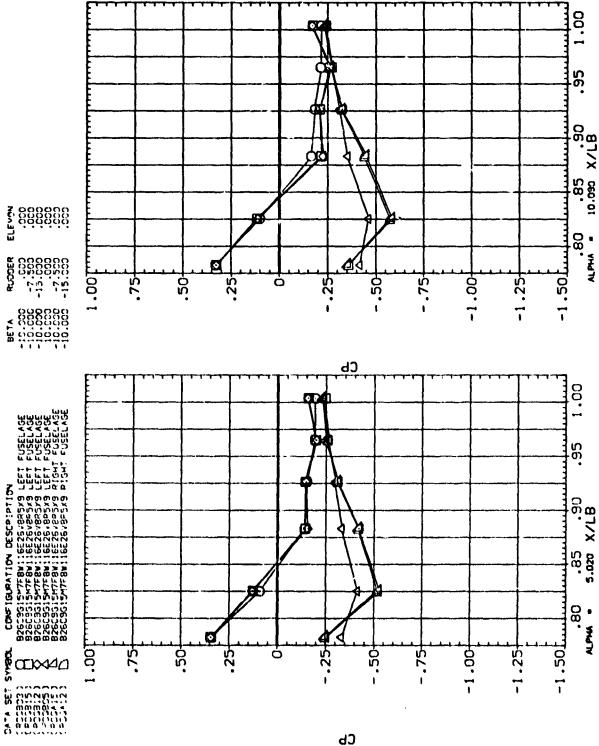
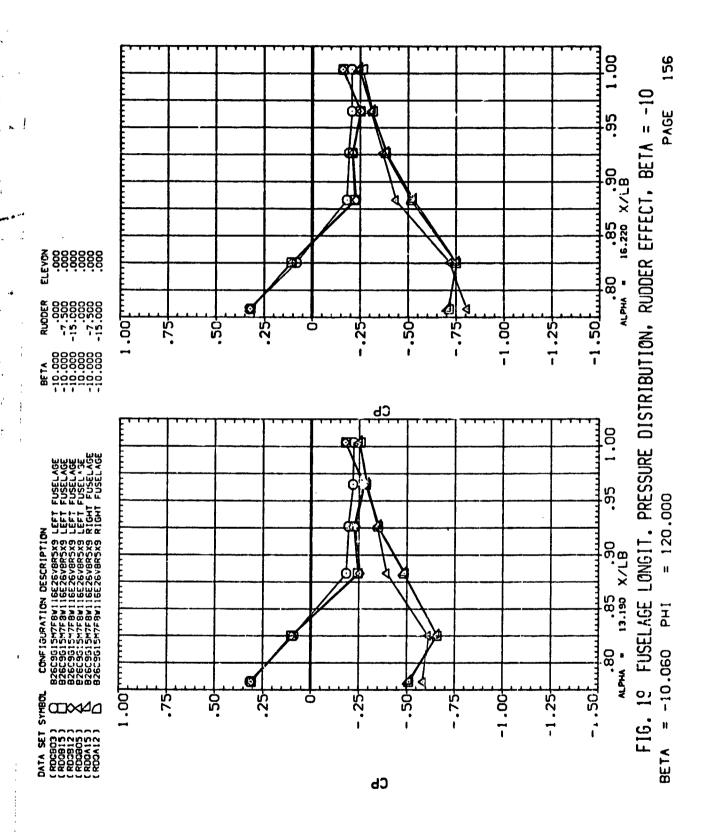


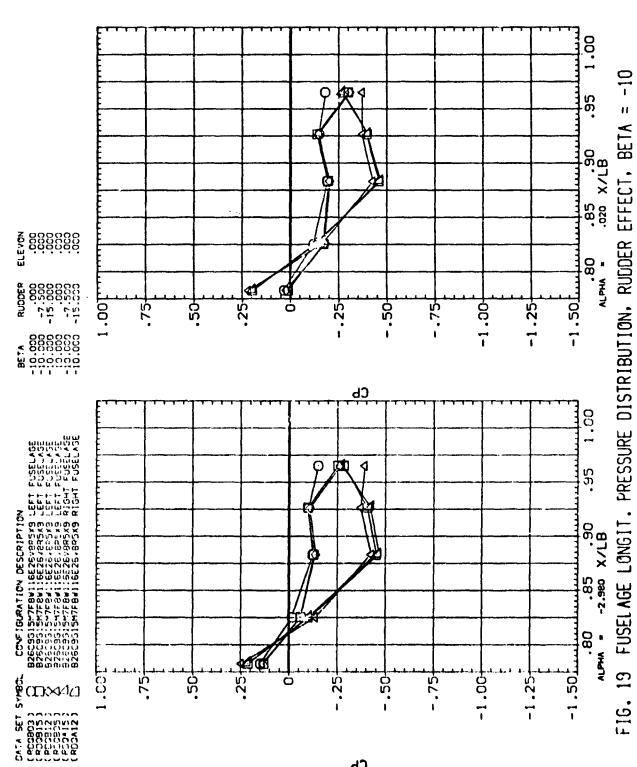
FIG. 19 FUSELAGE LONGIT. PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = -10 = 120.000PHI -10.060 II BETA

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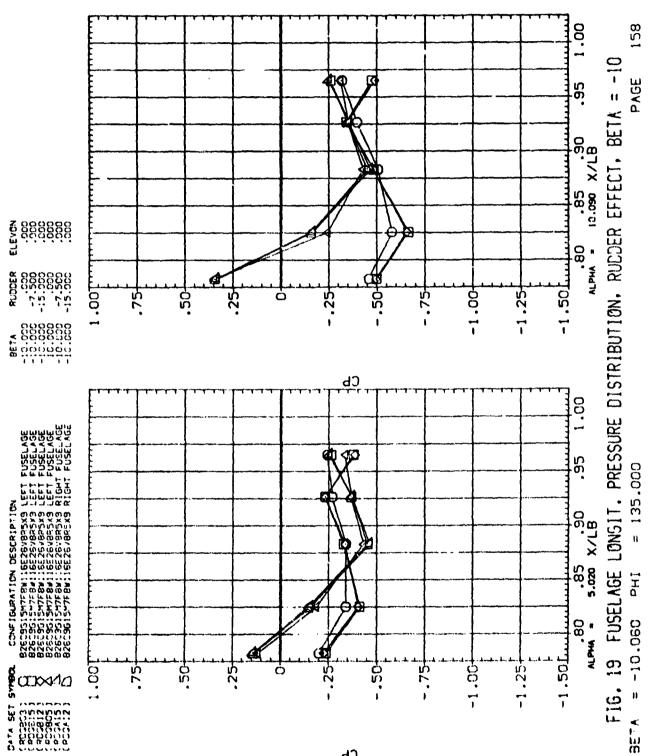
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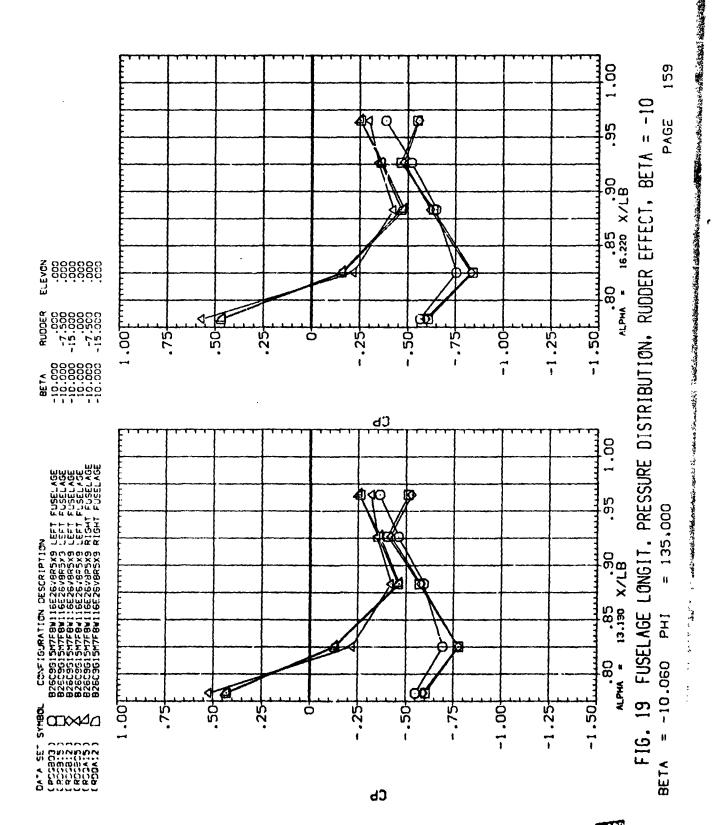


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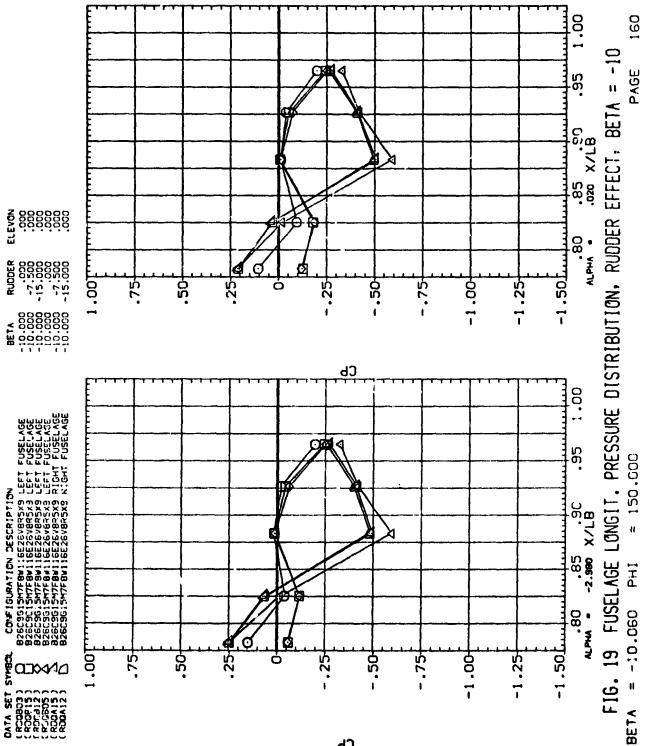
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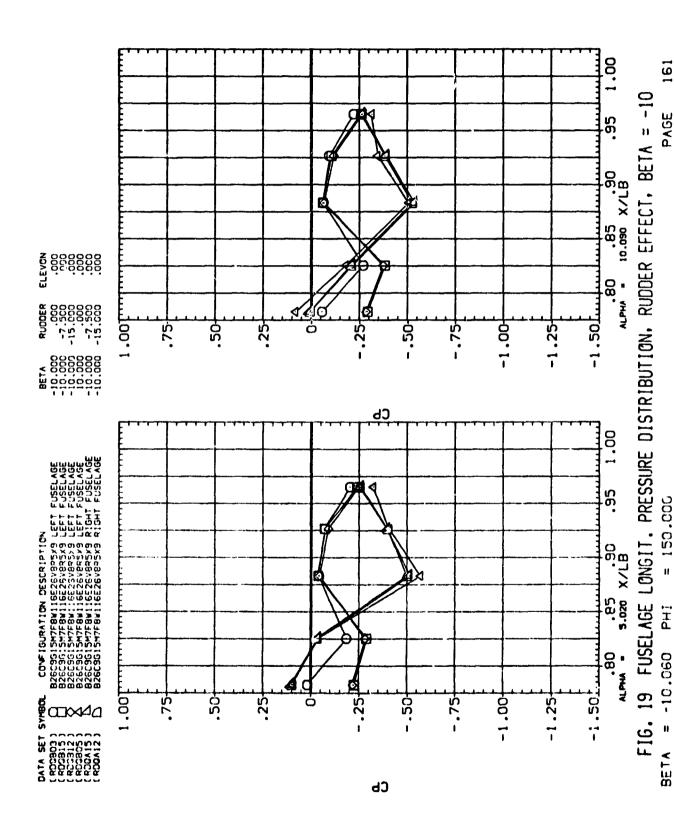
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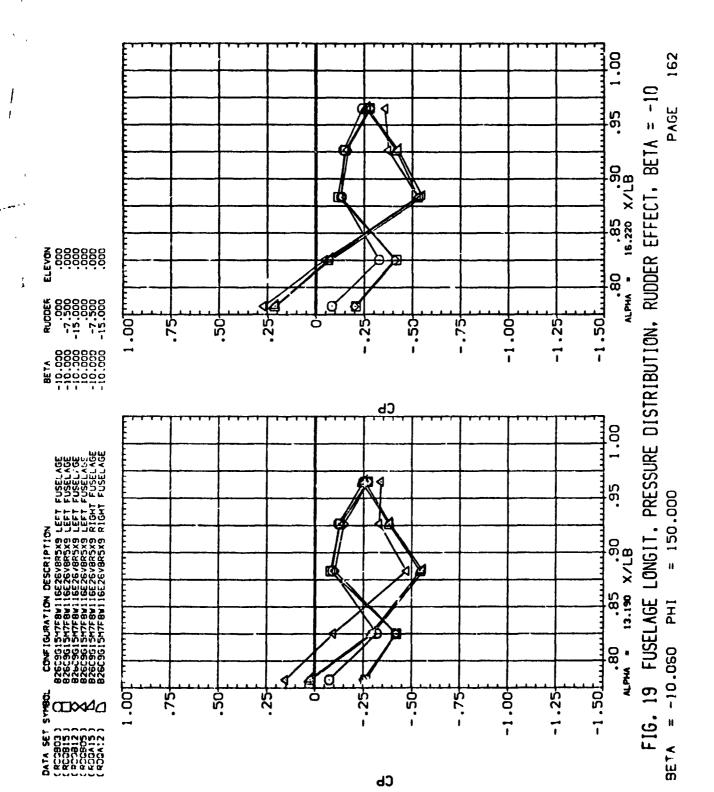
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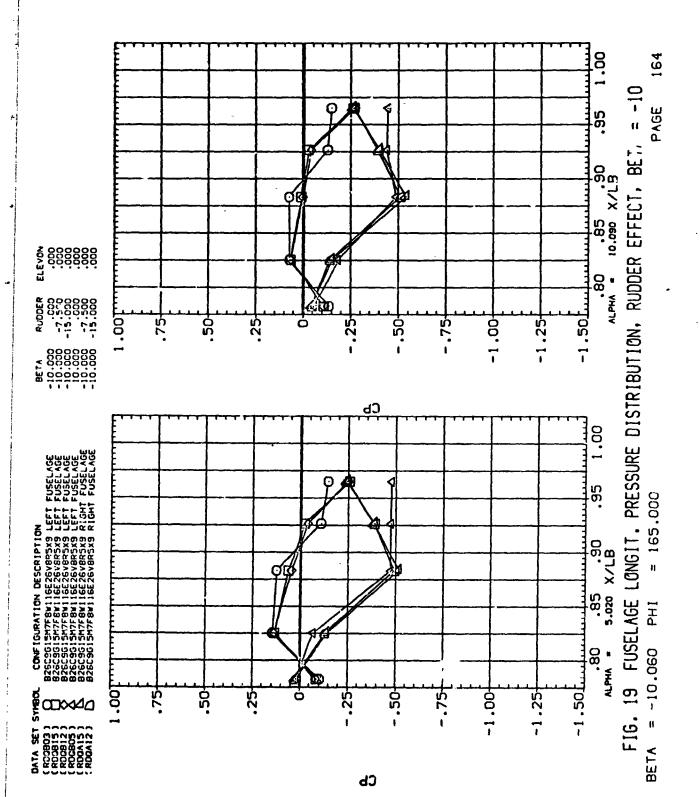
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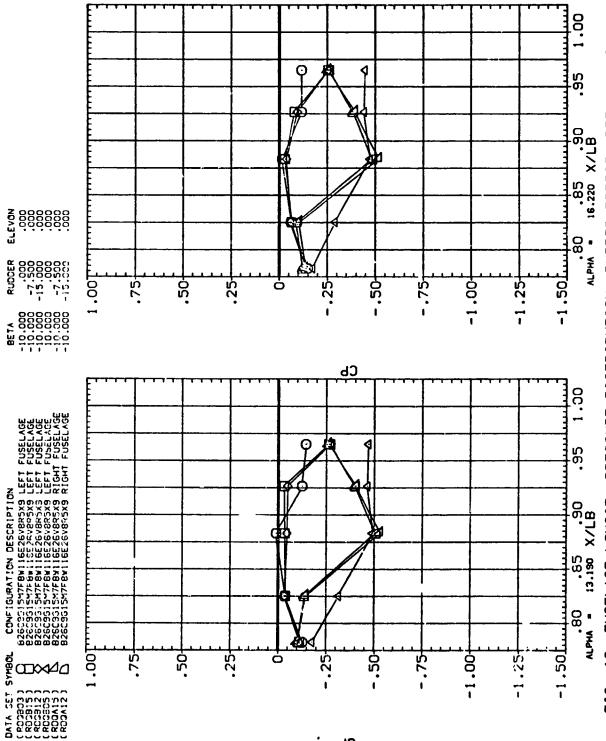
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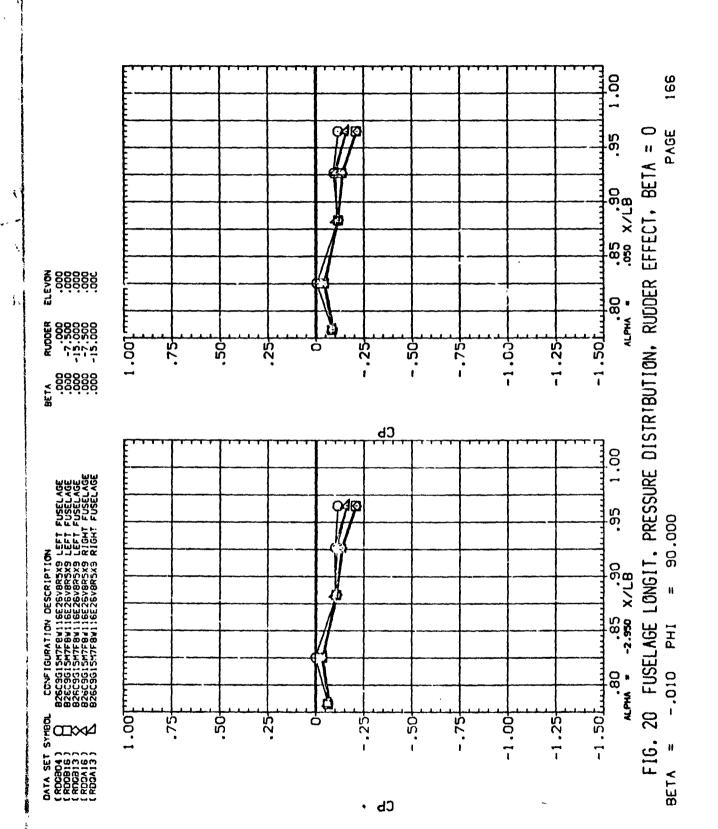
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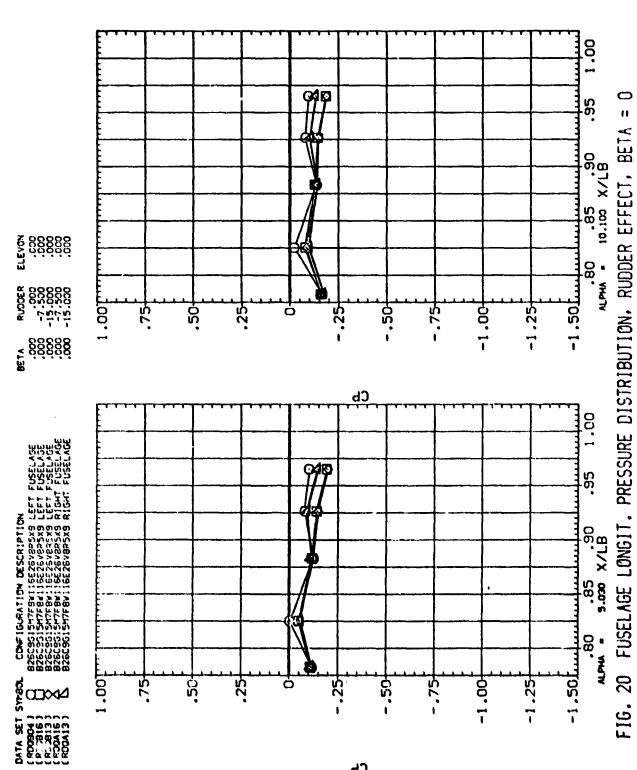
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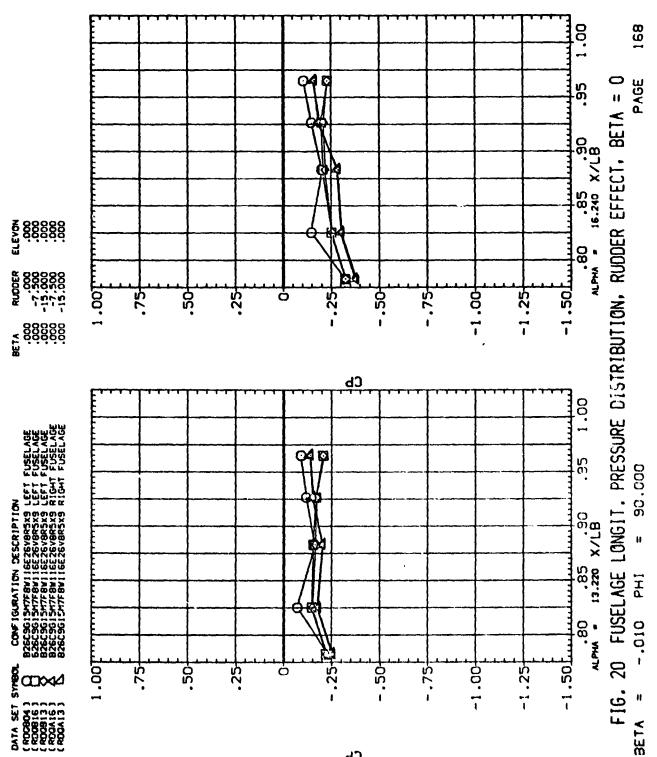
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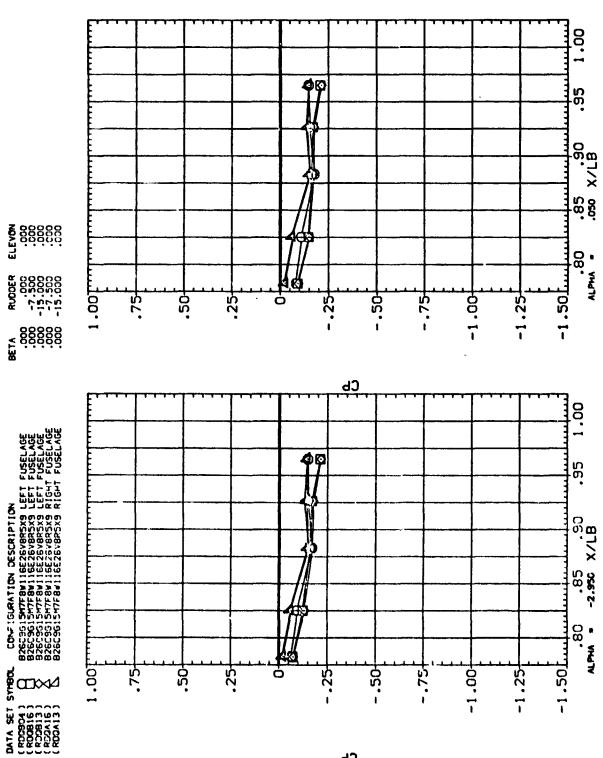
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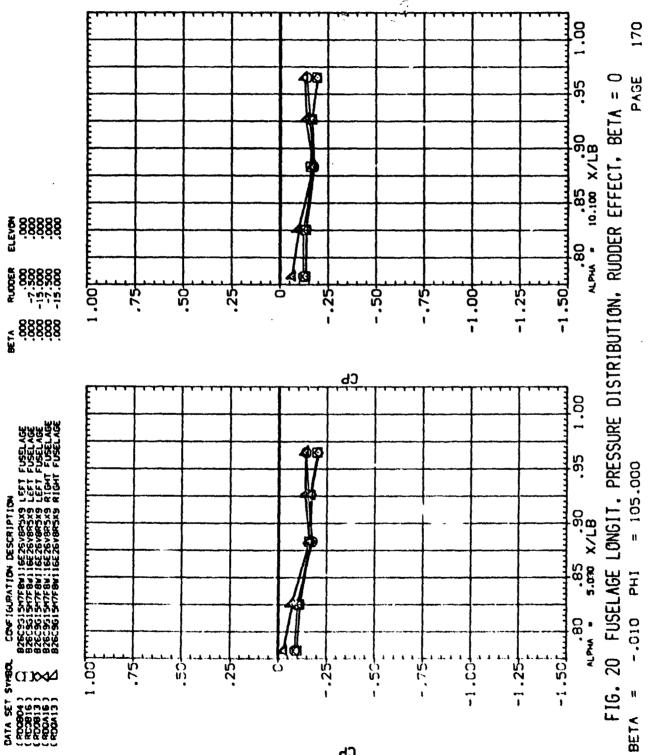
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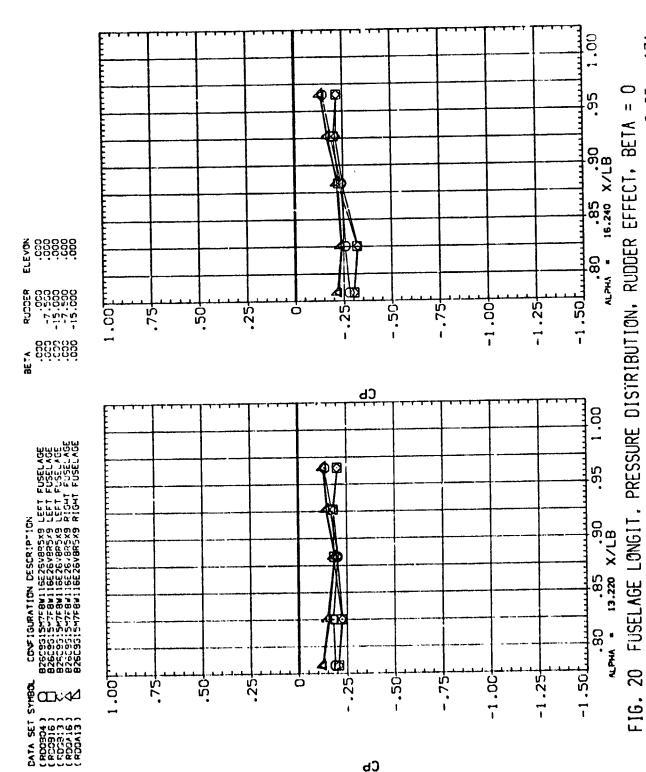
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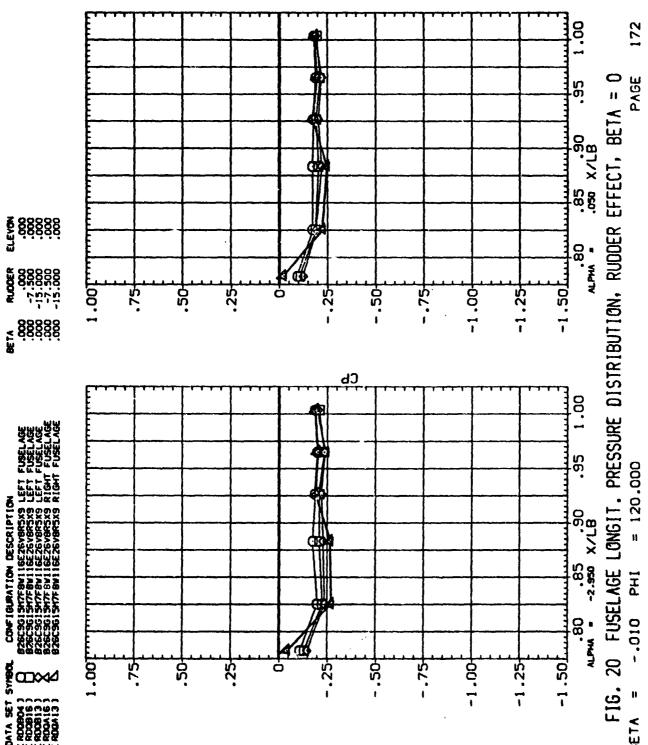
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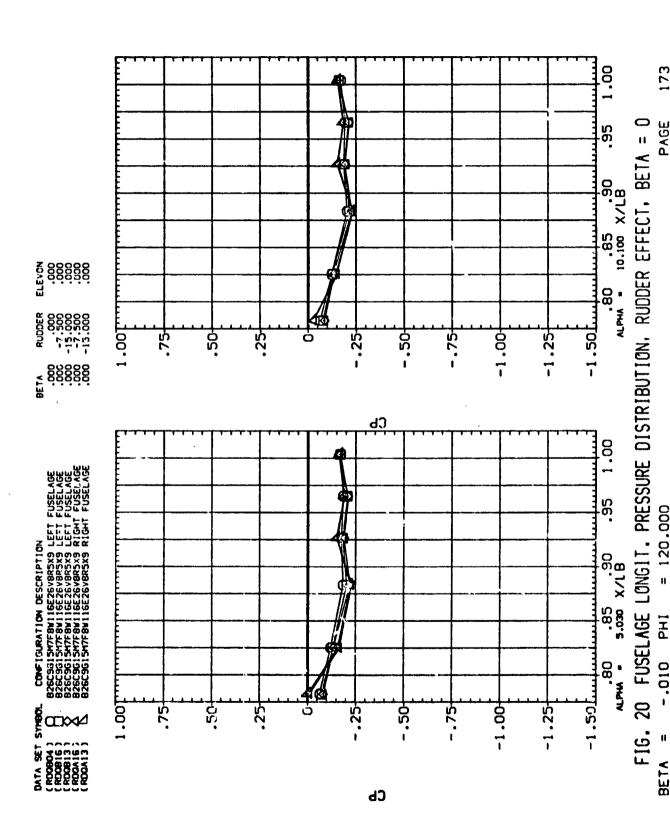


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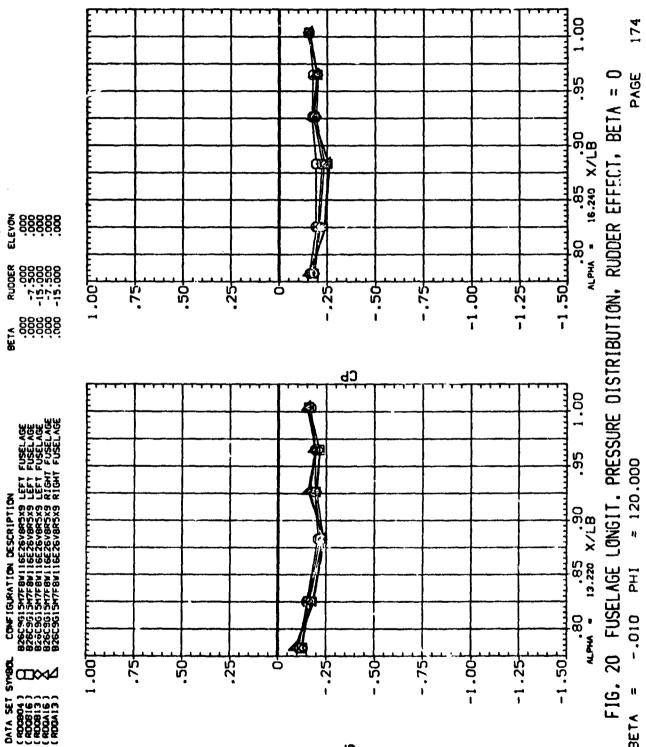


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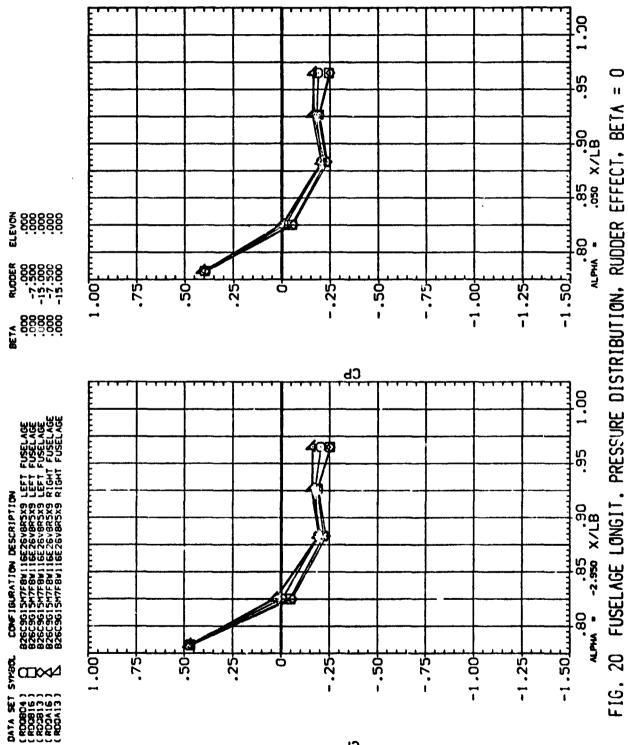
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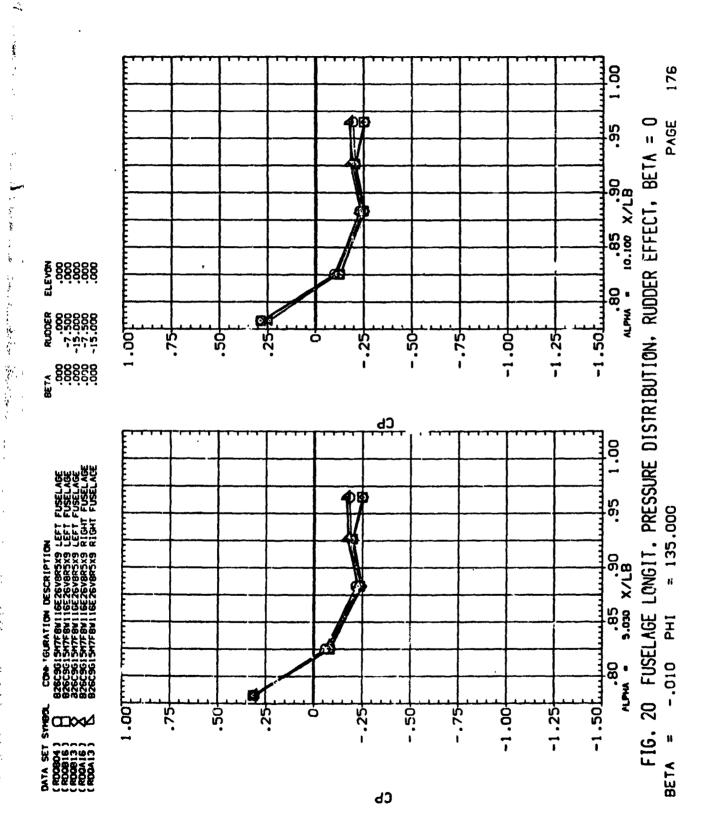
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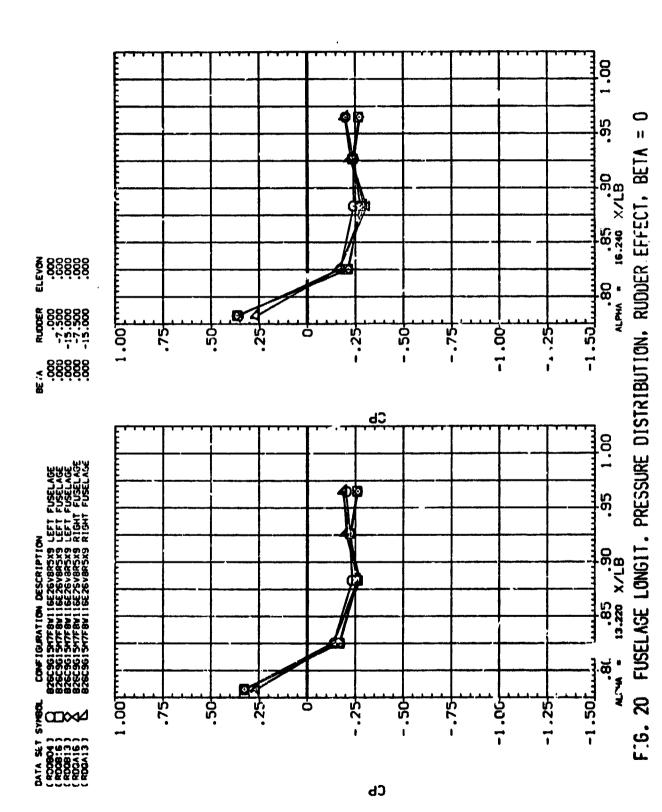
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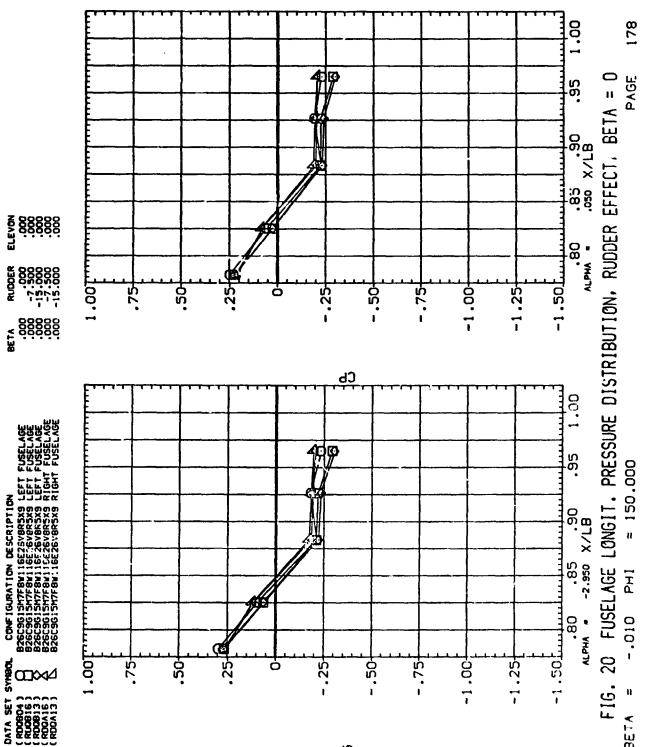
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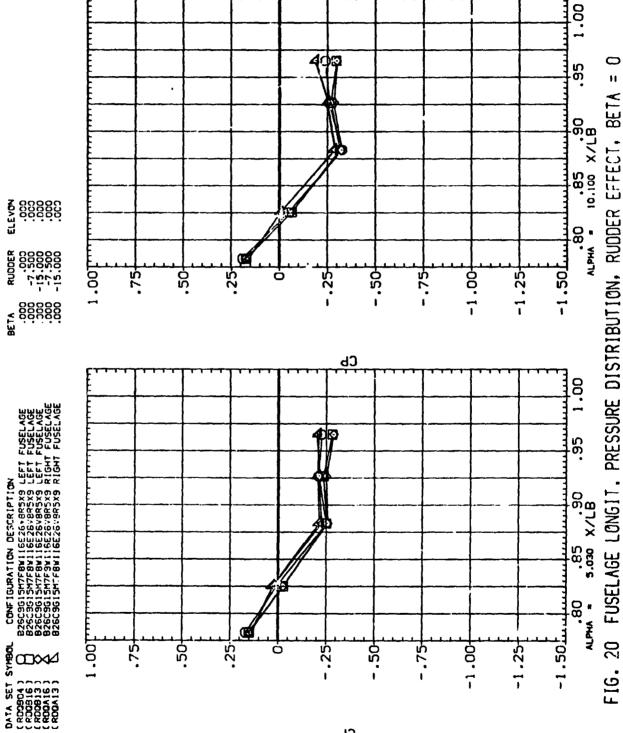








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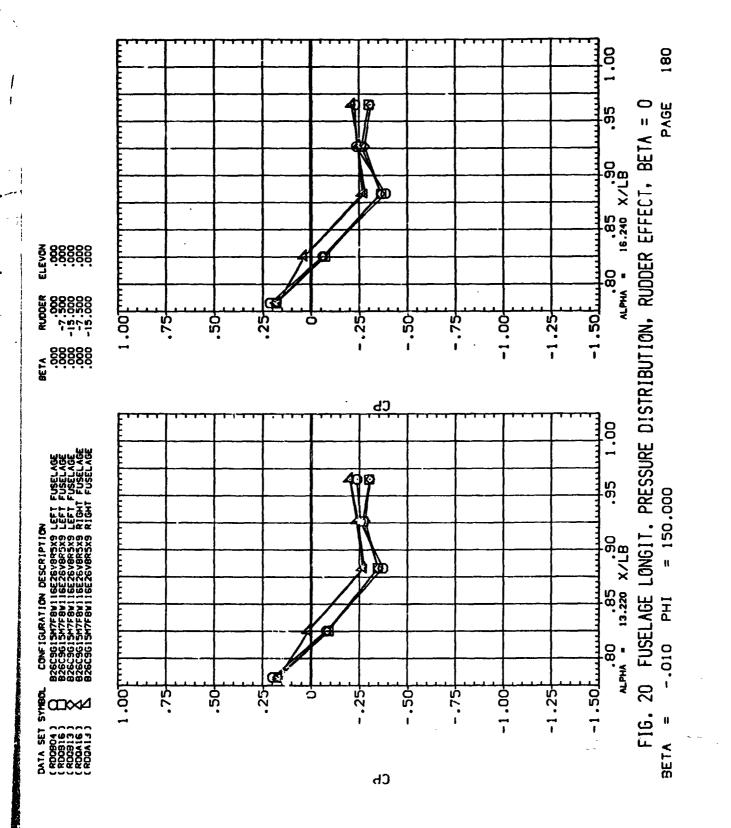
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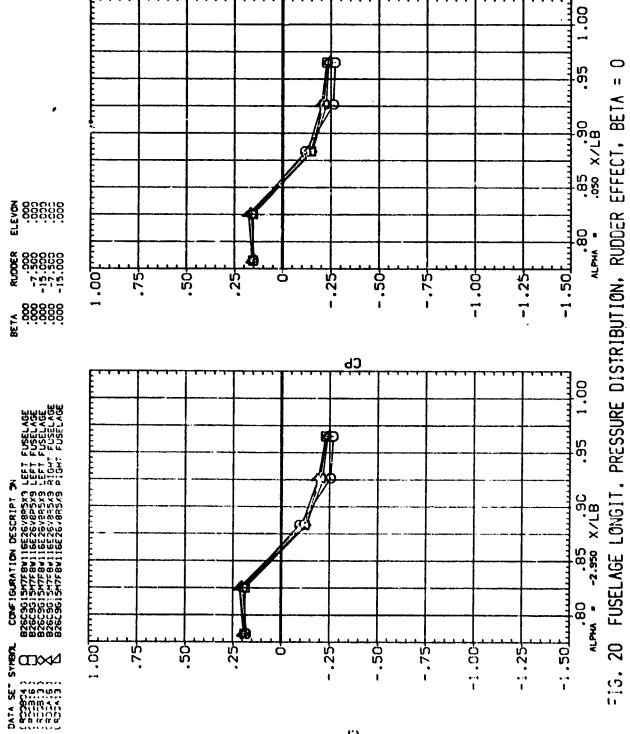
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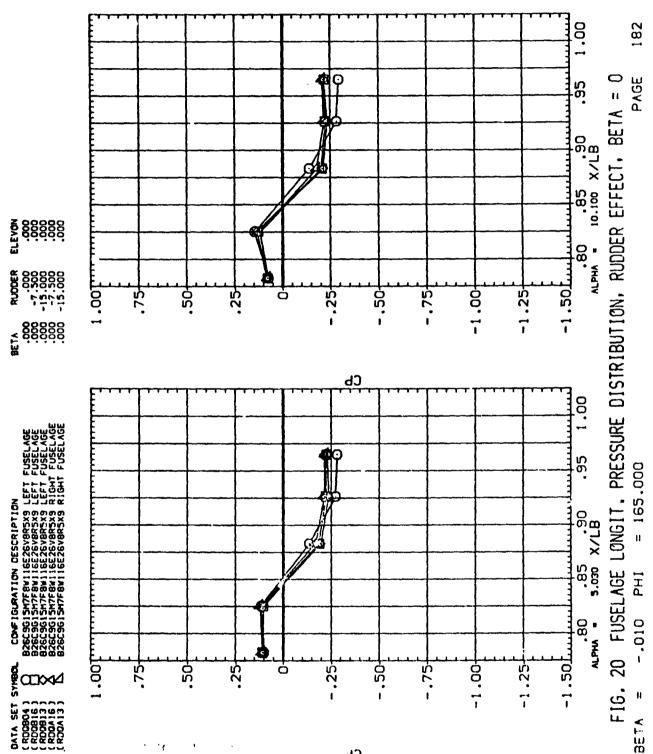
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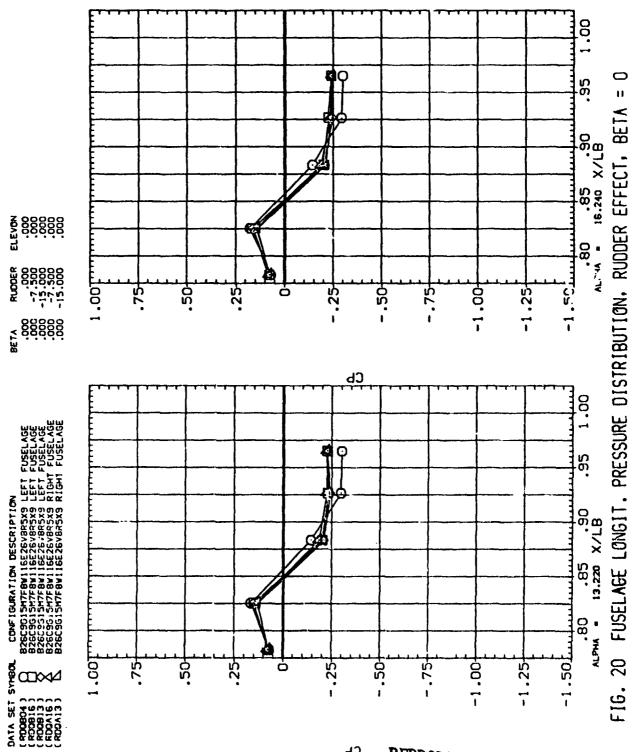


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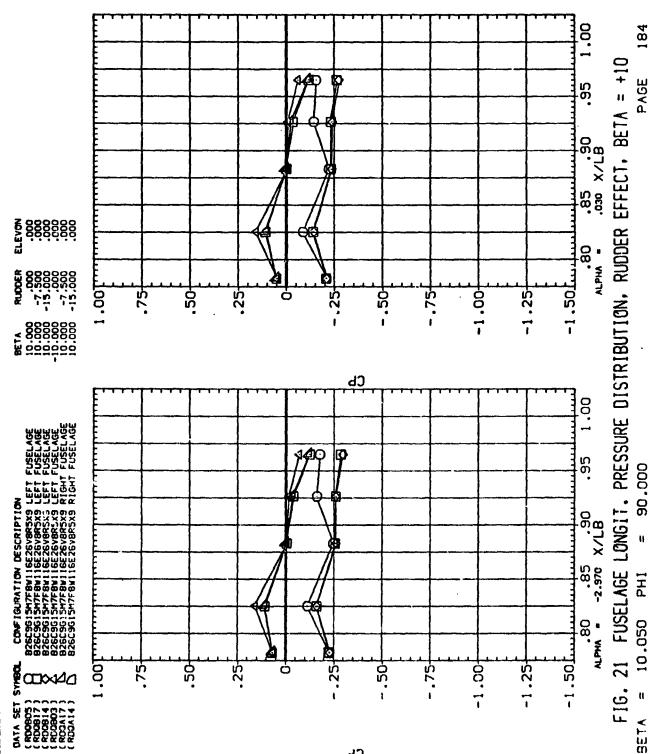
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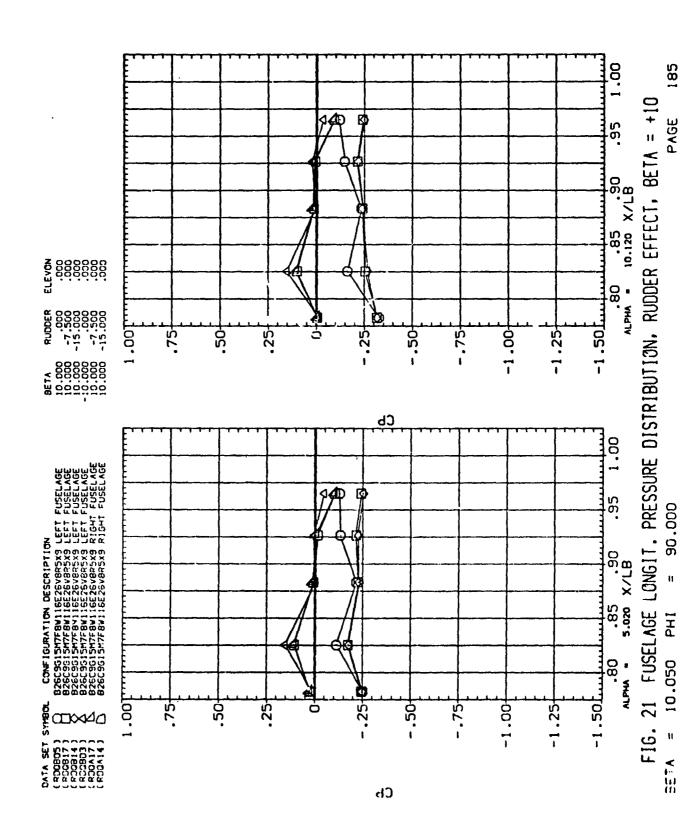
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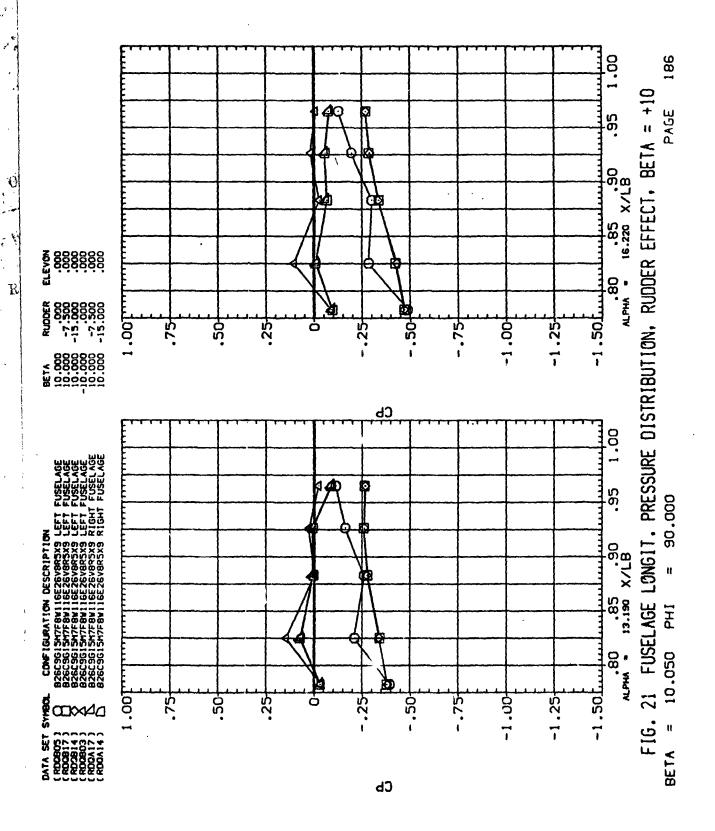
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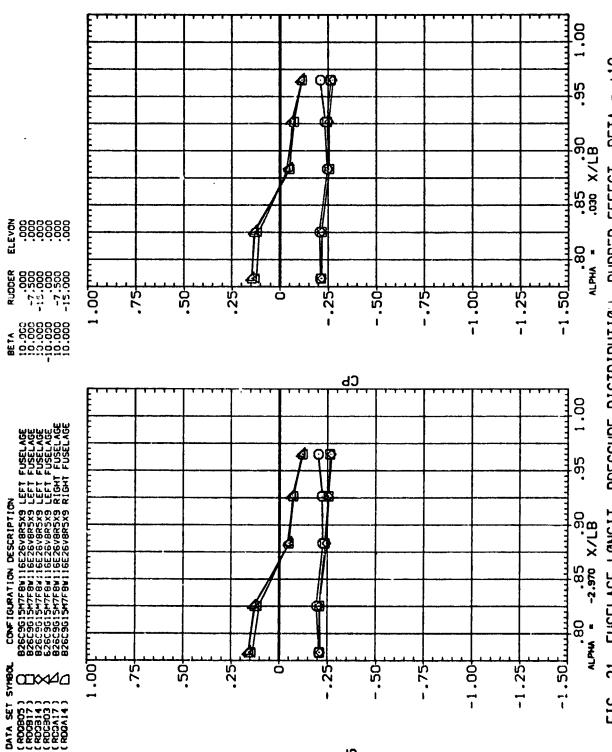
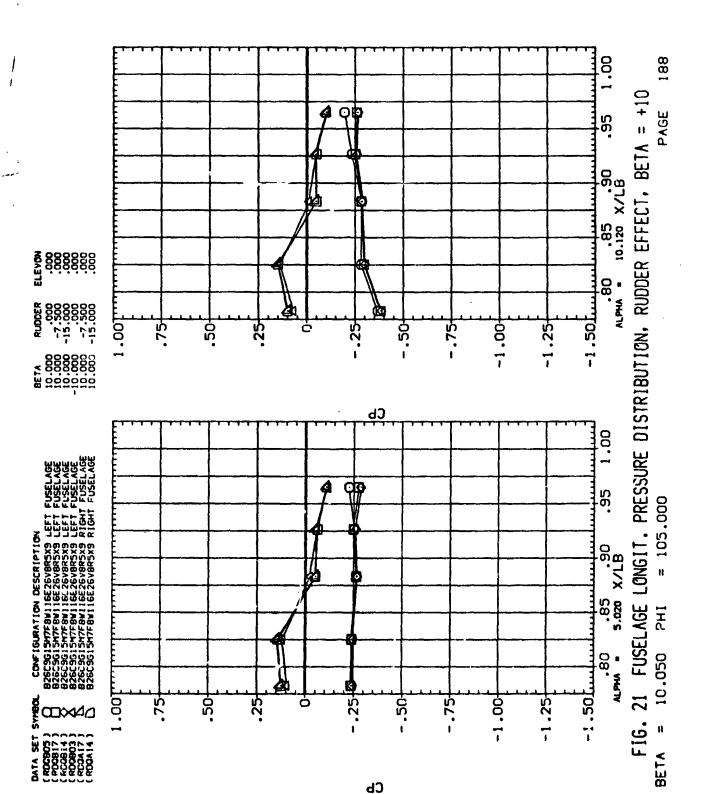


FIG. 21 FUSELAGE LONGII. PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = +10 = 105.000PHI 10.050 BETA

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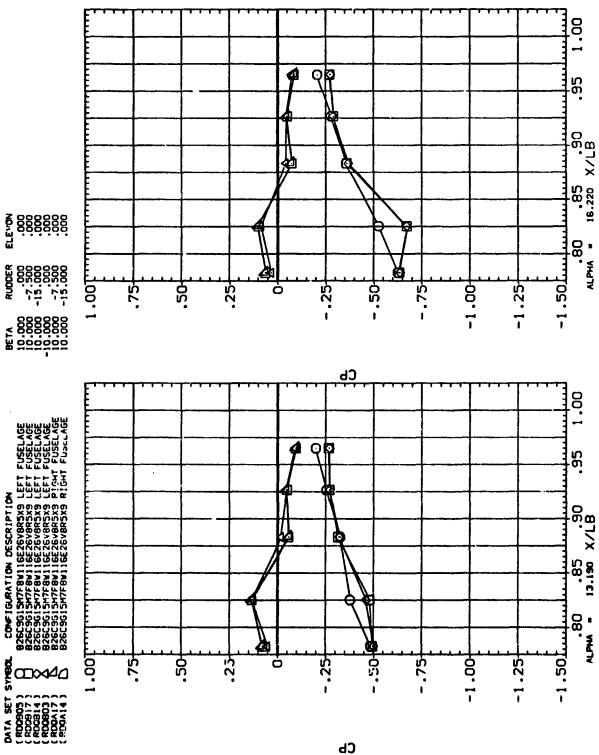
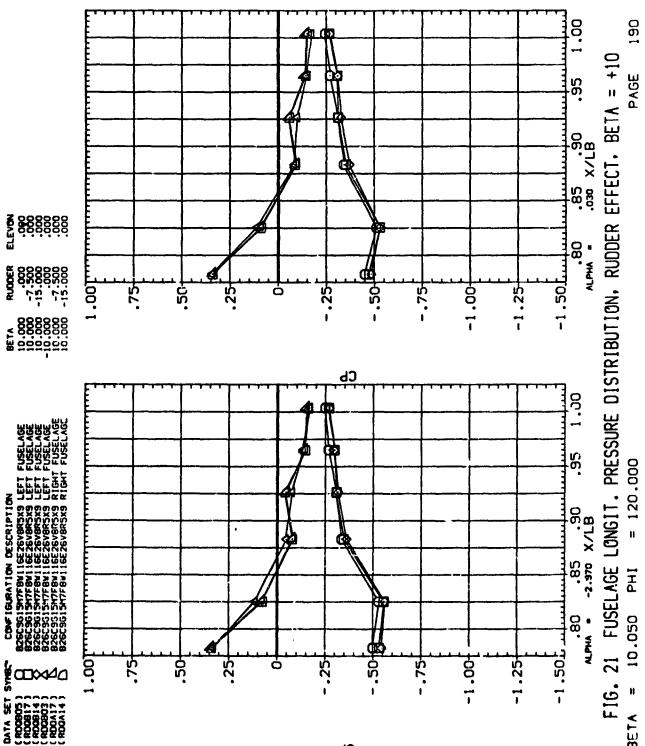


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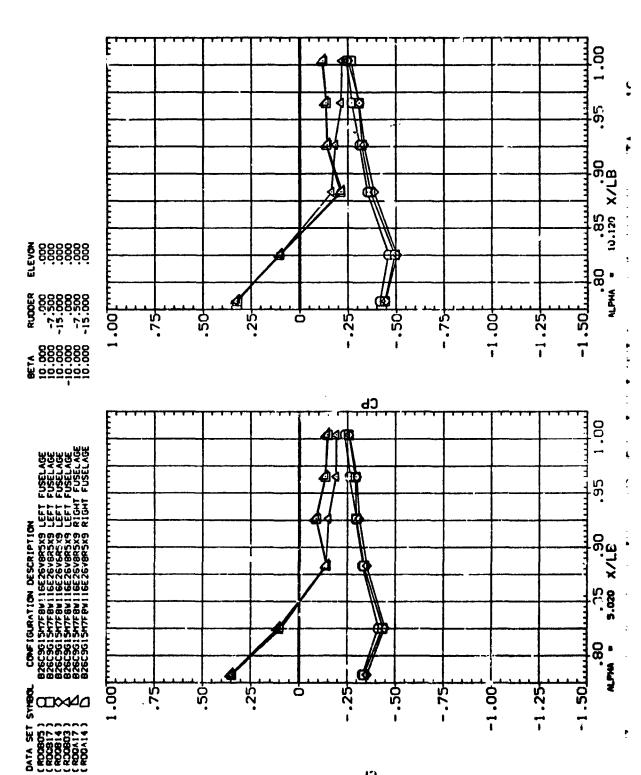


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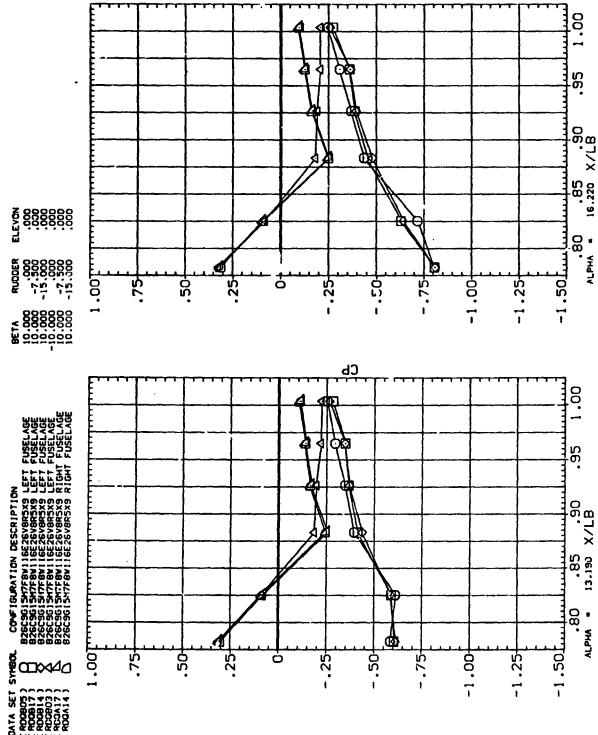


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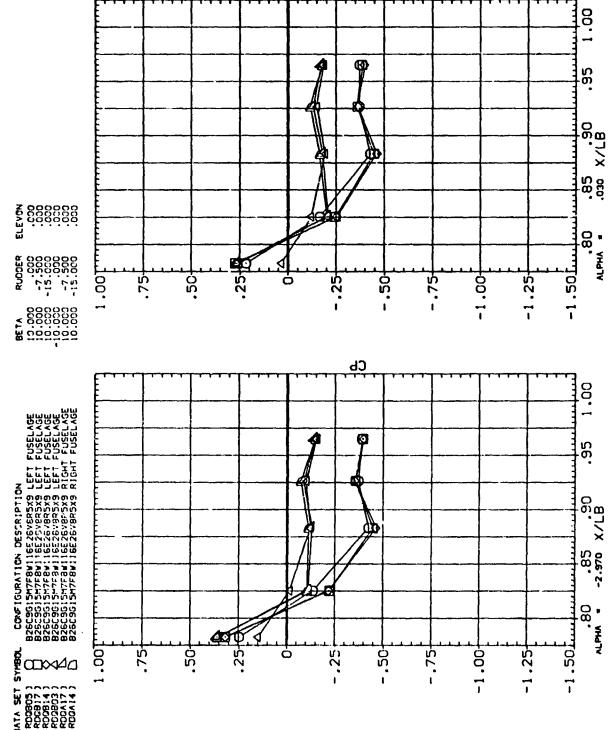
192 21 FUSELAGE LONGIT. PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = +10 = 120.000 PH1 10.050 FIG. BETA

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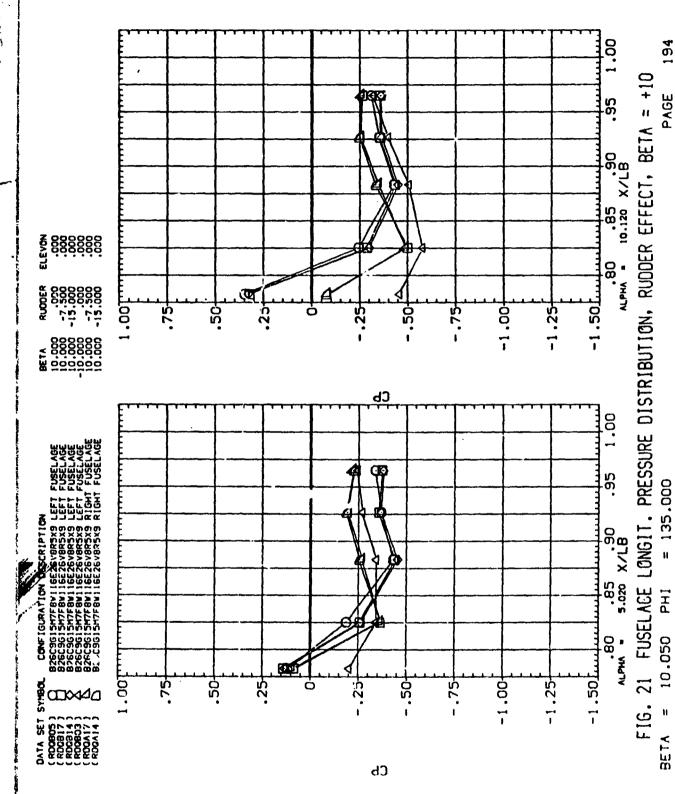
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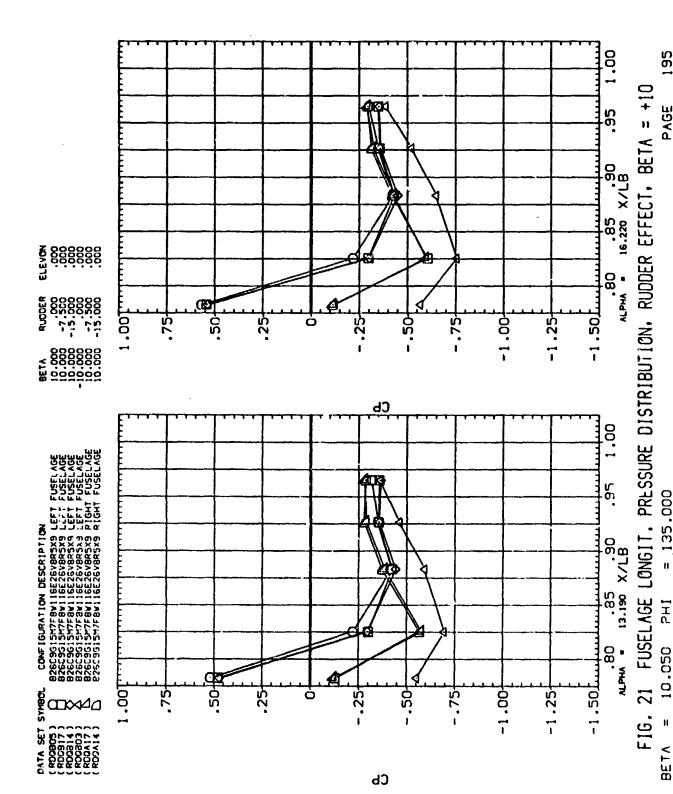
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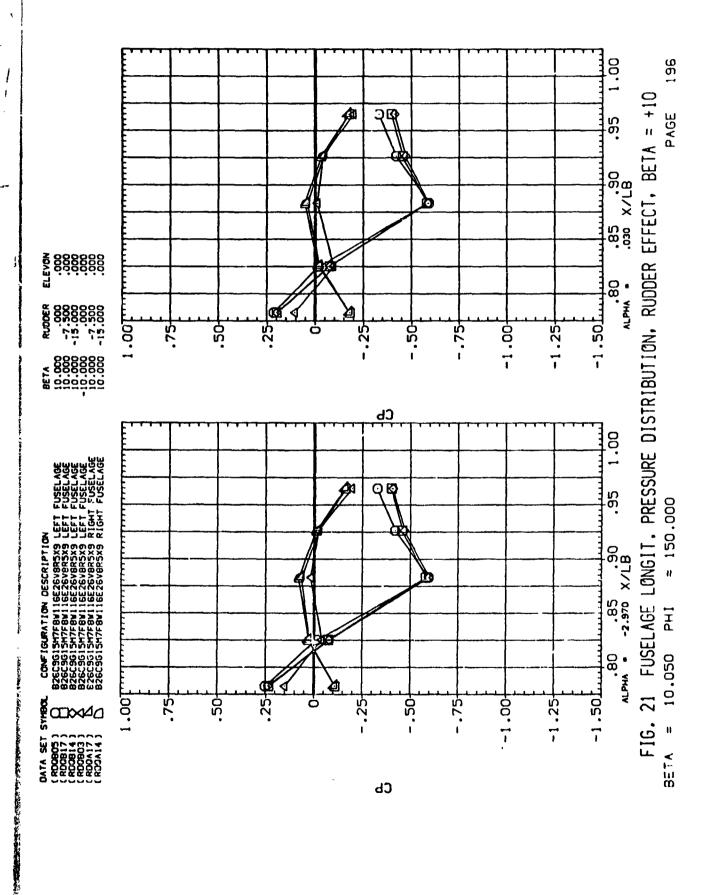


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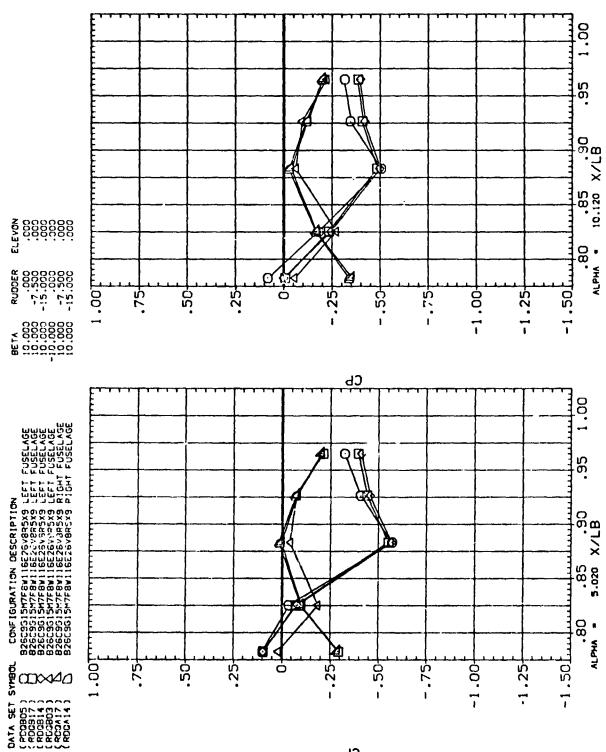
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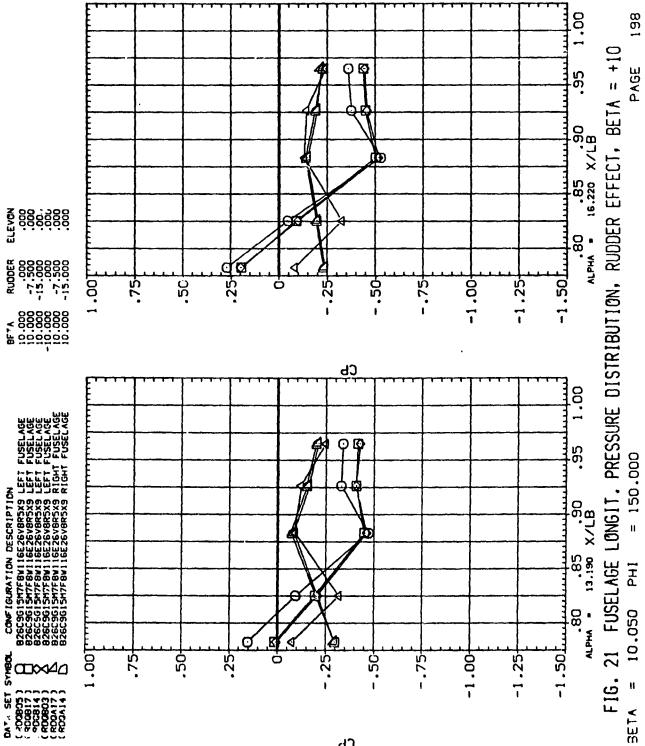


197 FIG. 21 FUSELAGE LONGIT. PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = +10 PAGE = 150.000PH 10.050 u BETA

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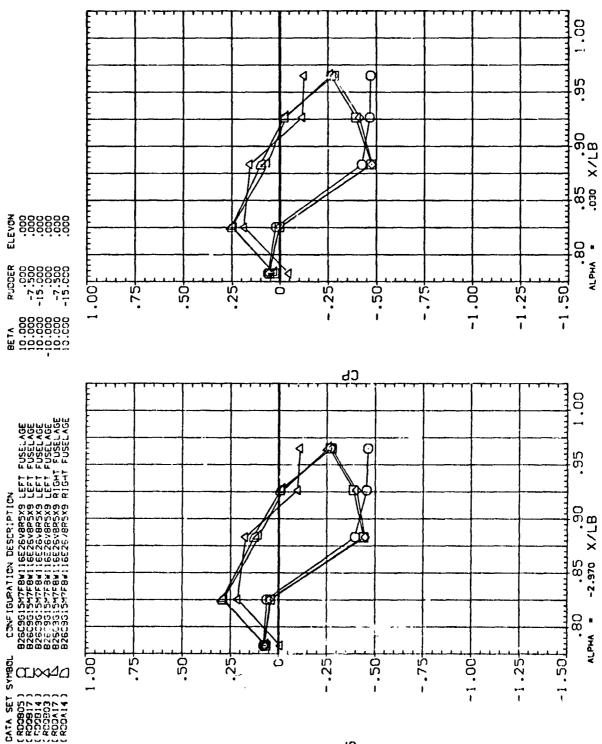
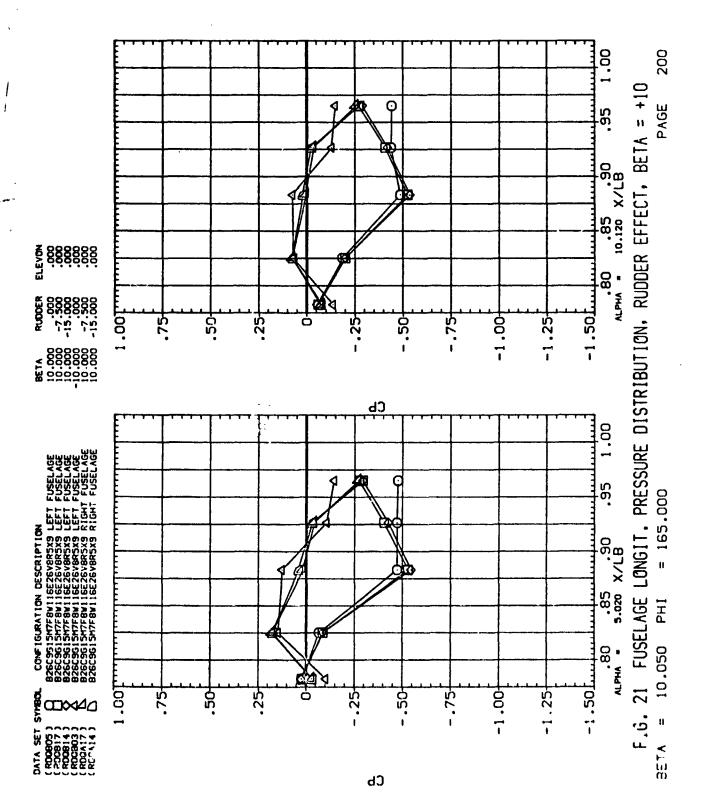


FIG. 21 FUSELAGE LONGIT. PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = +10 = 165,300 = 10.050 PHI

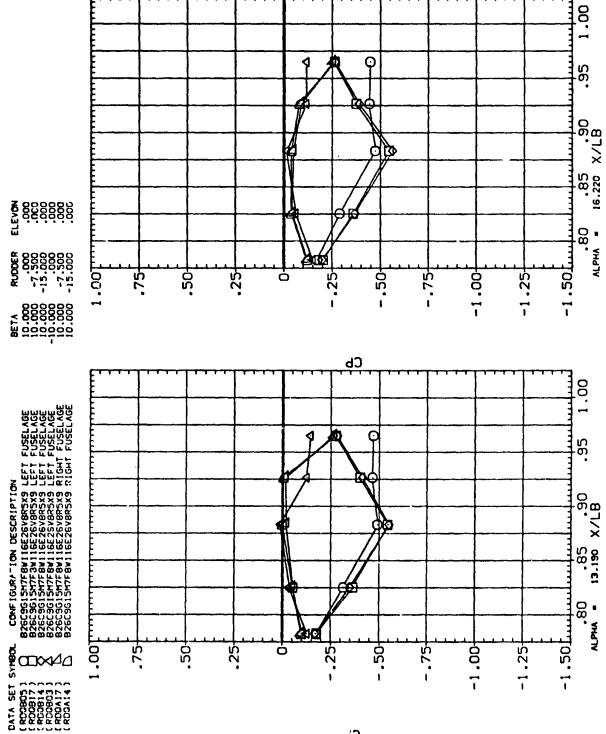
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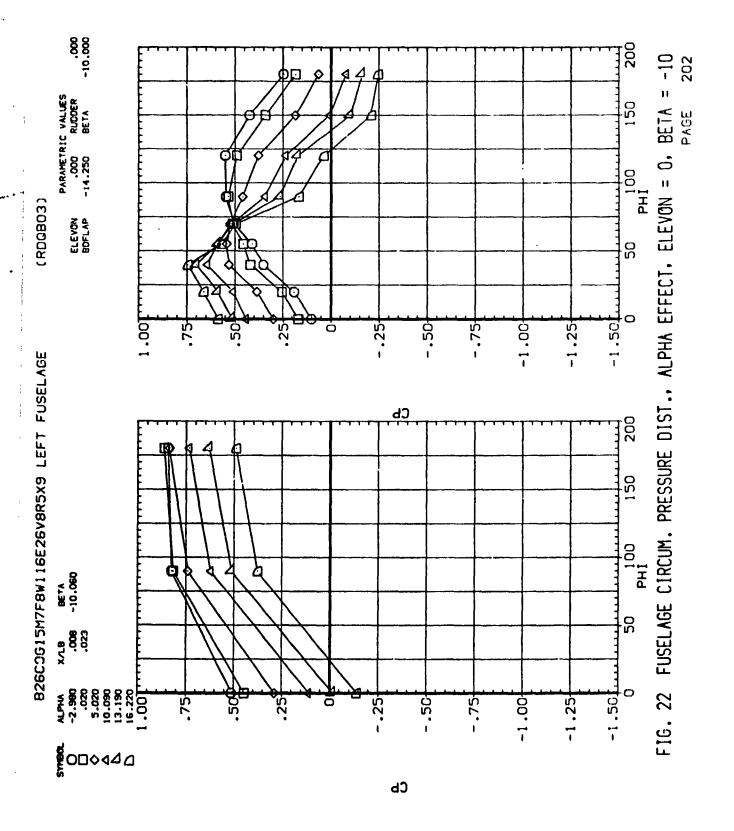
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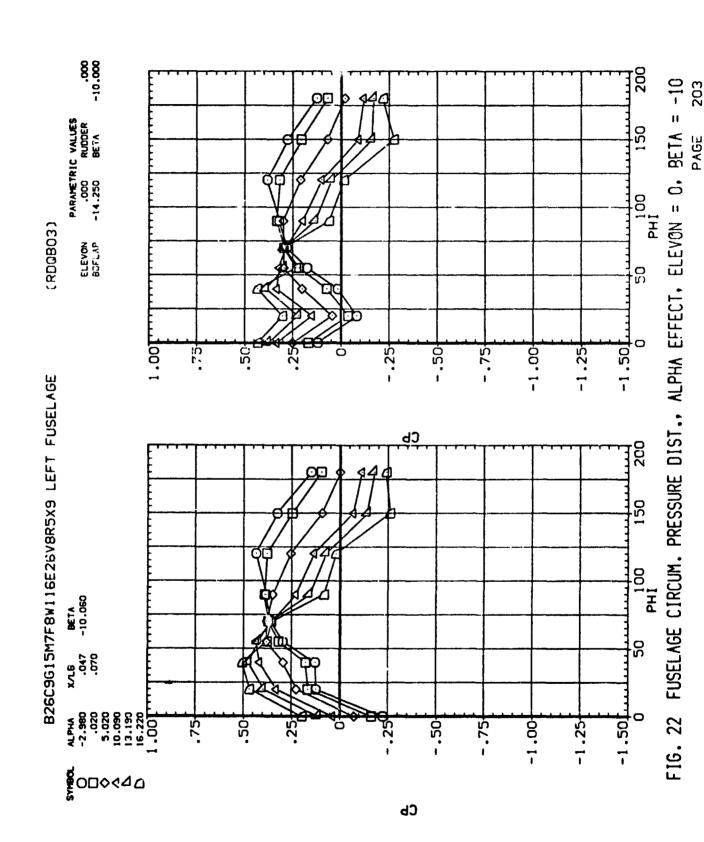
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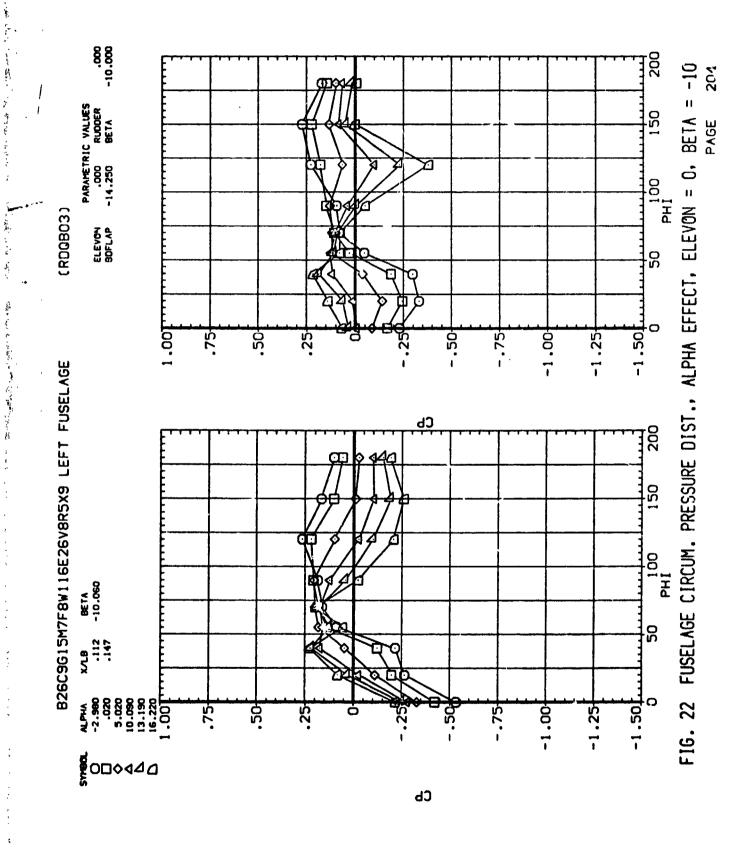
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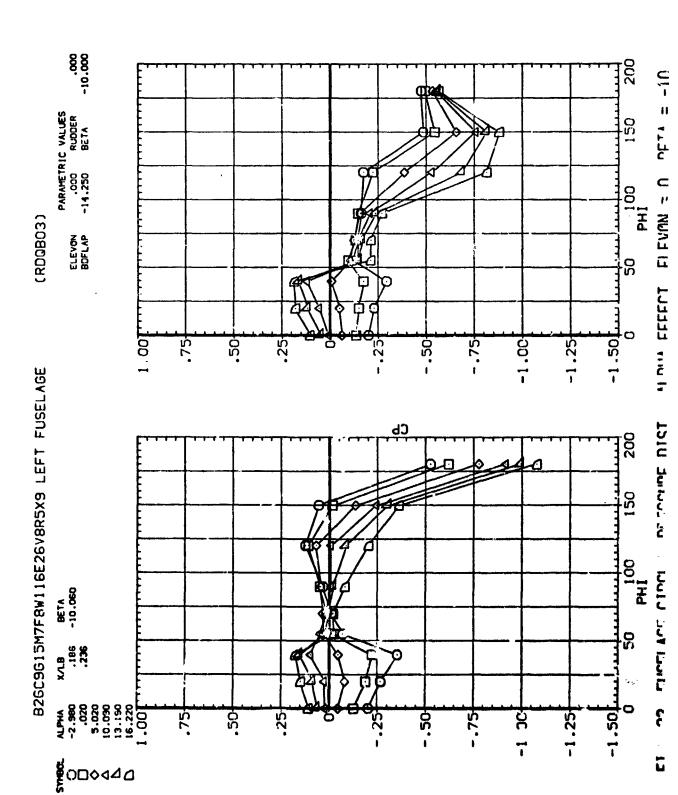




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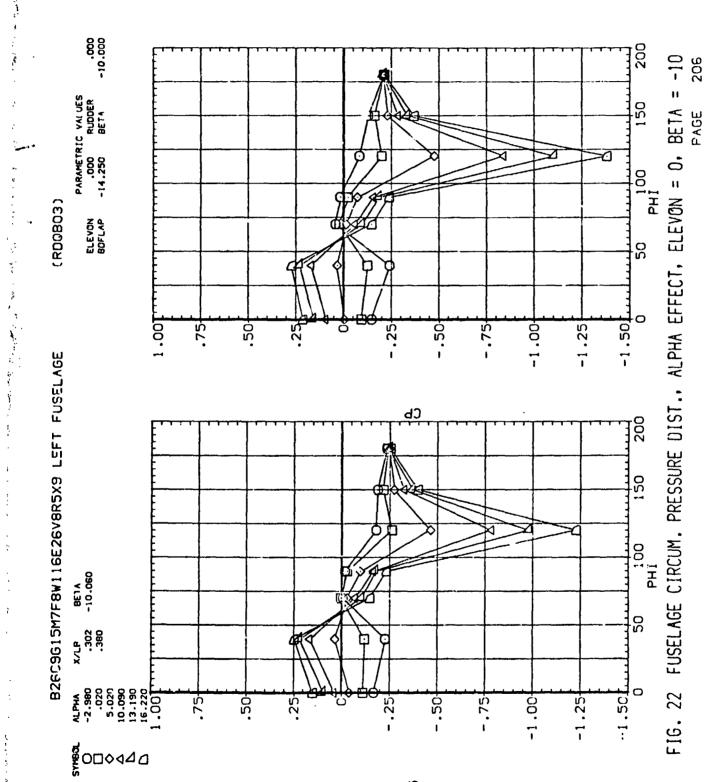


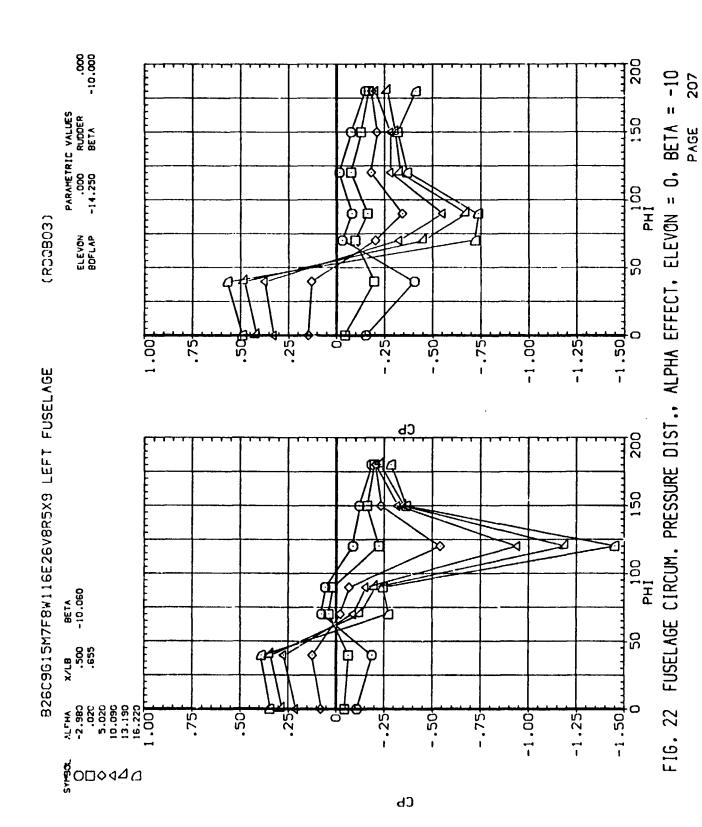


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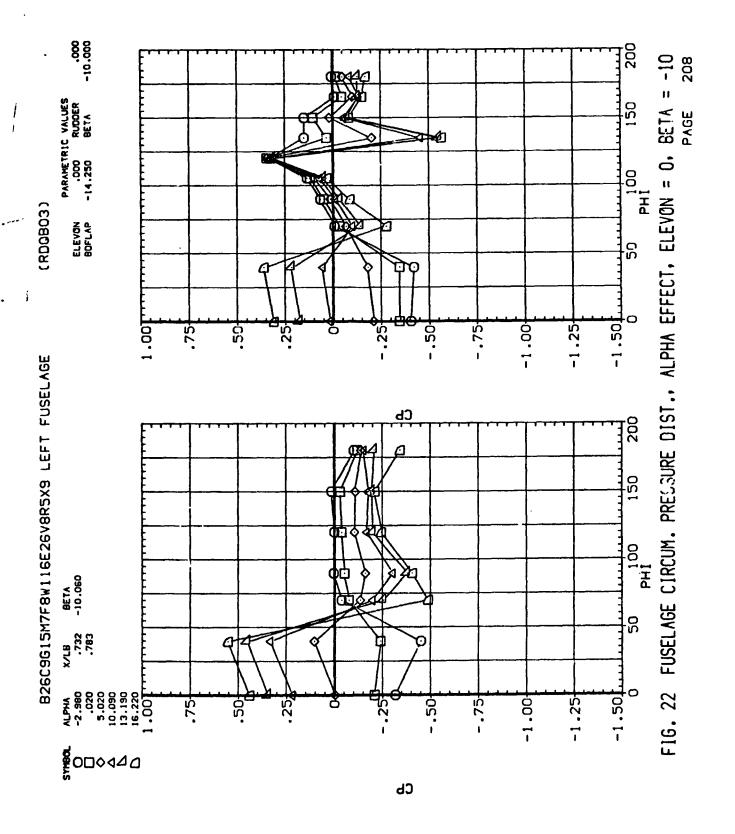
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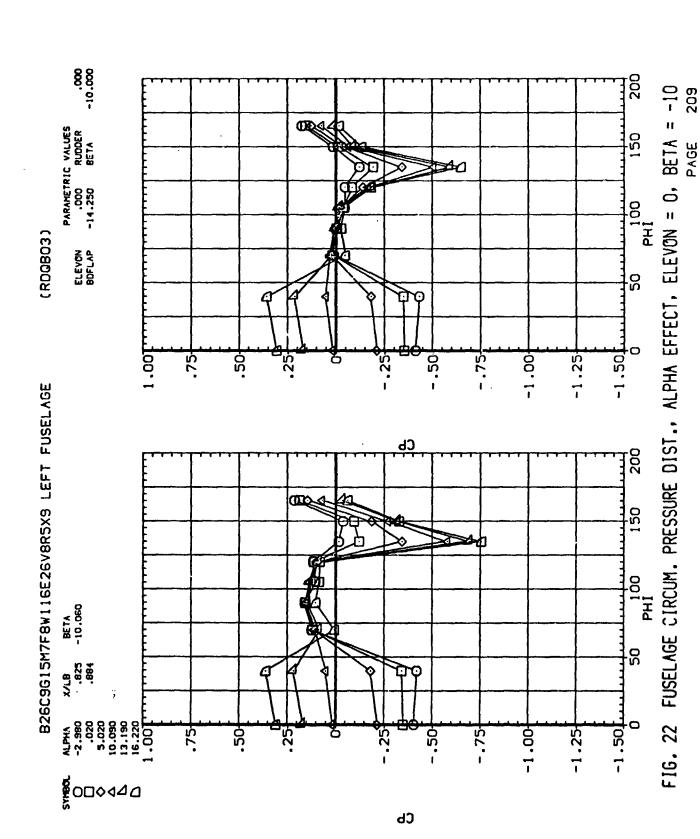
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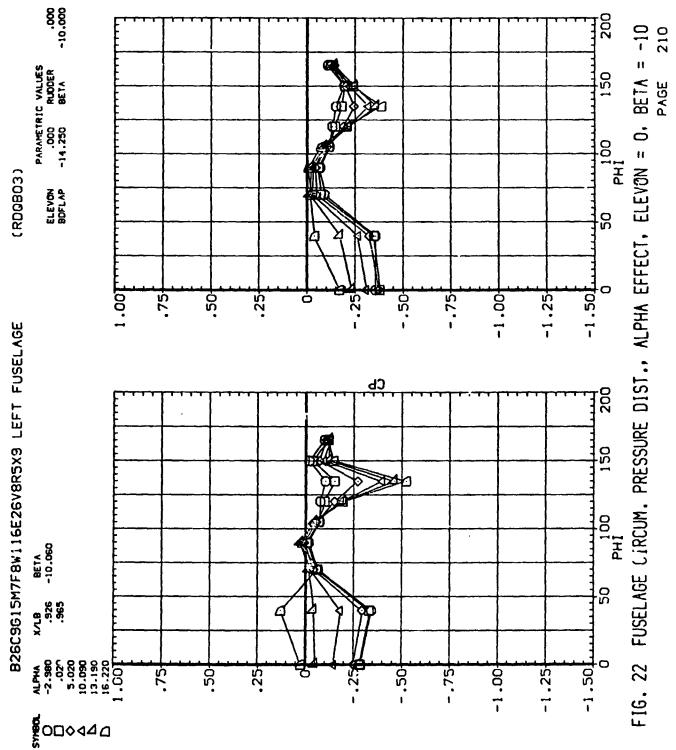




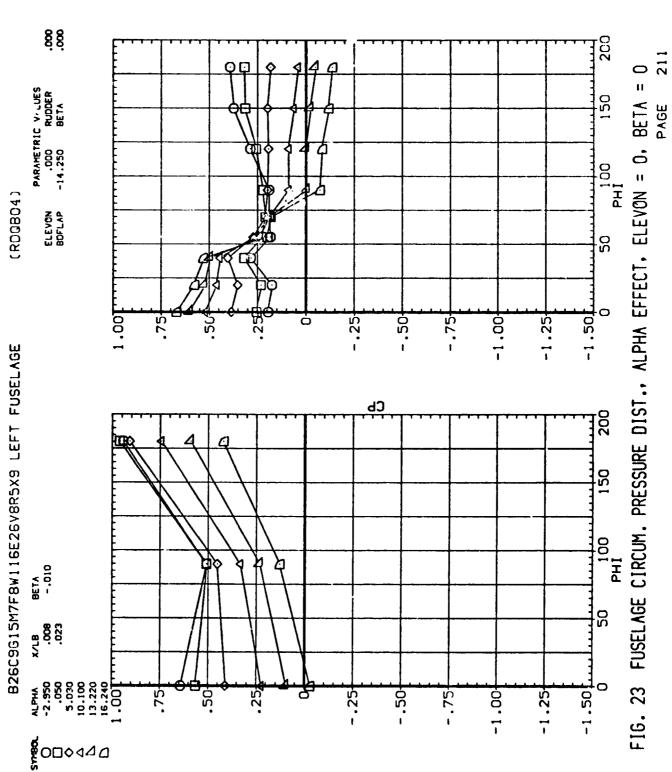
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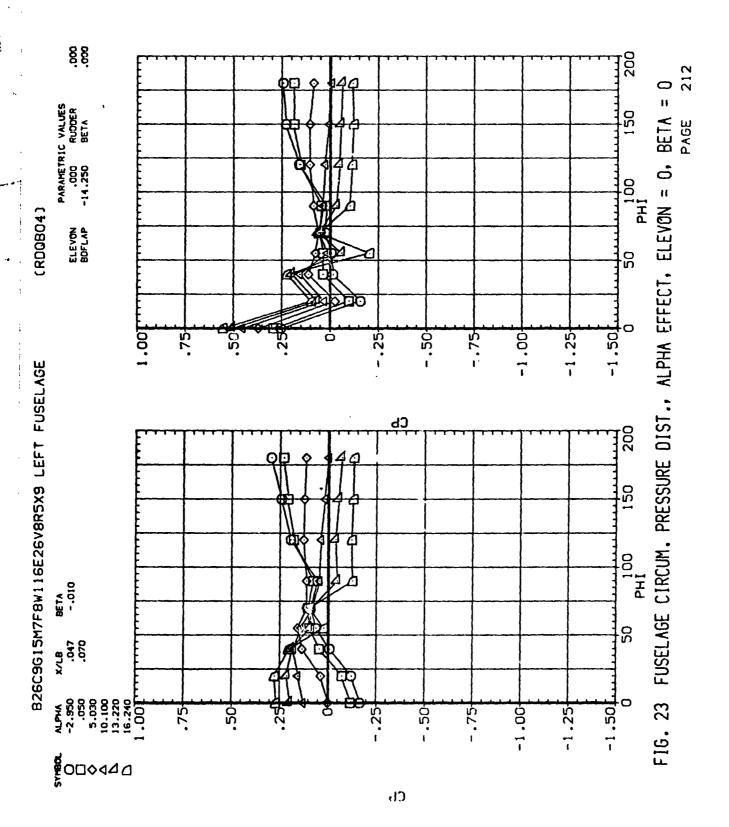


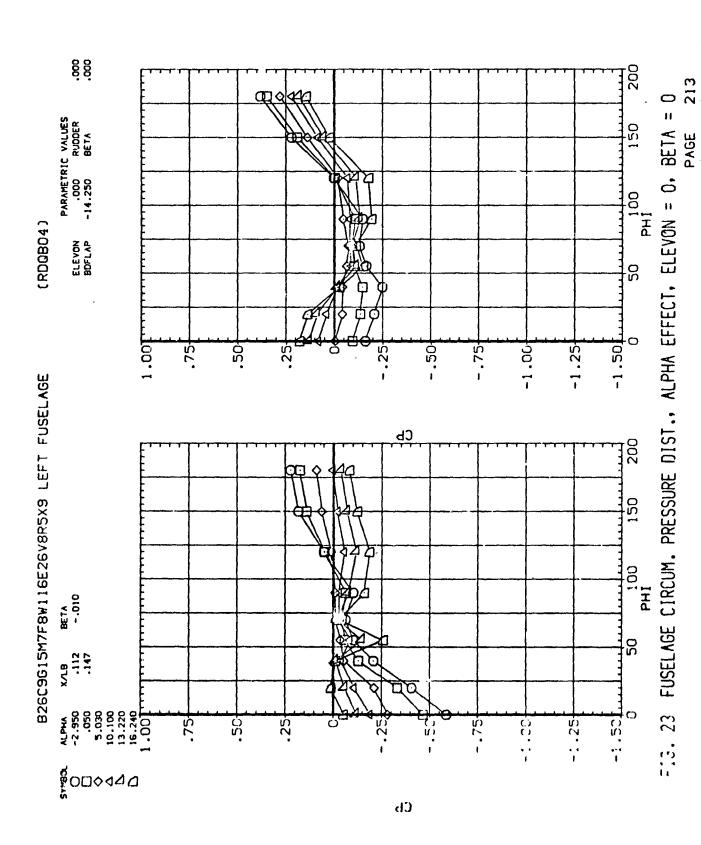
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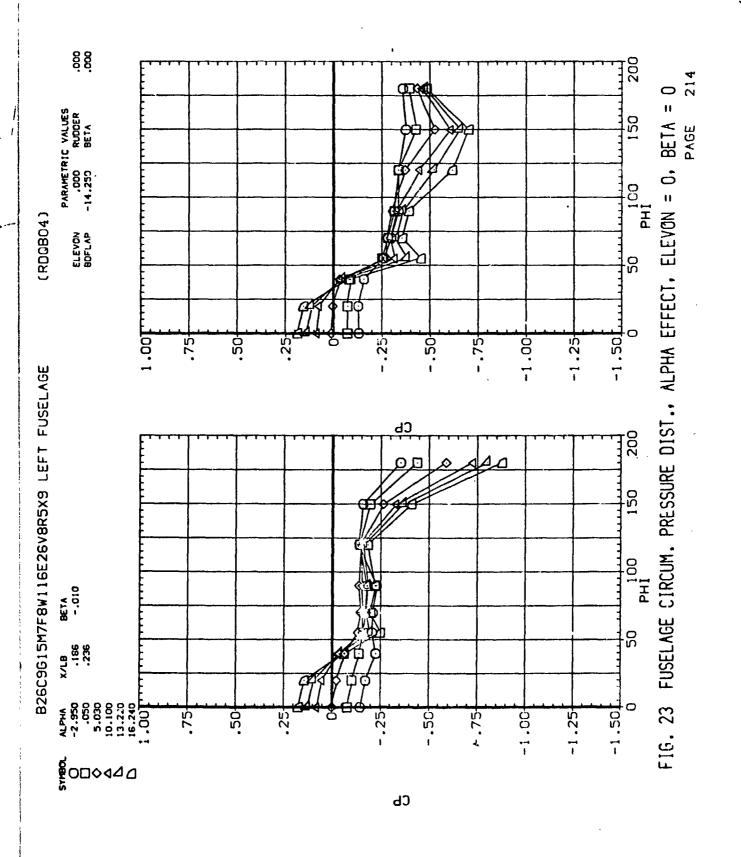
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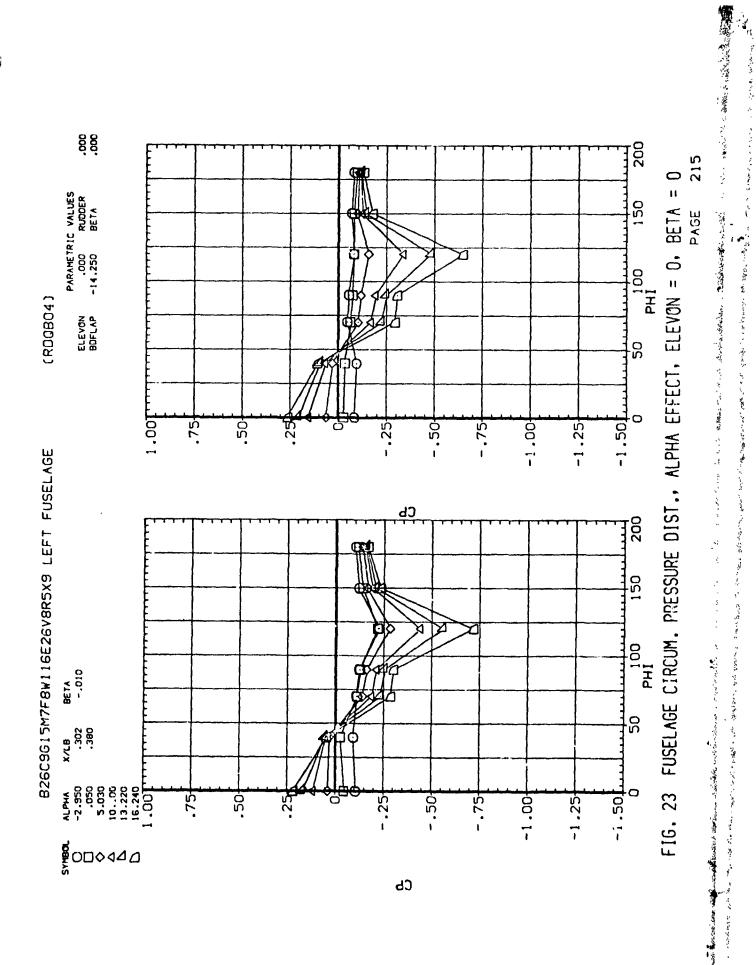




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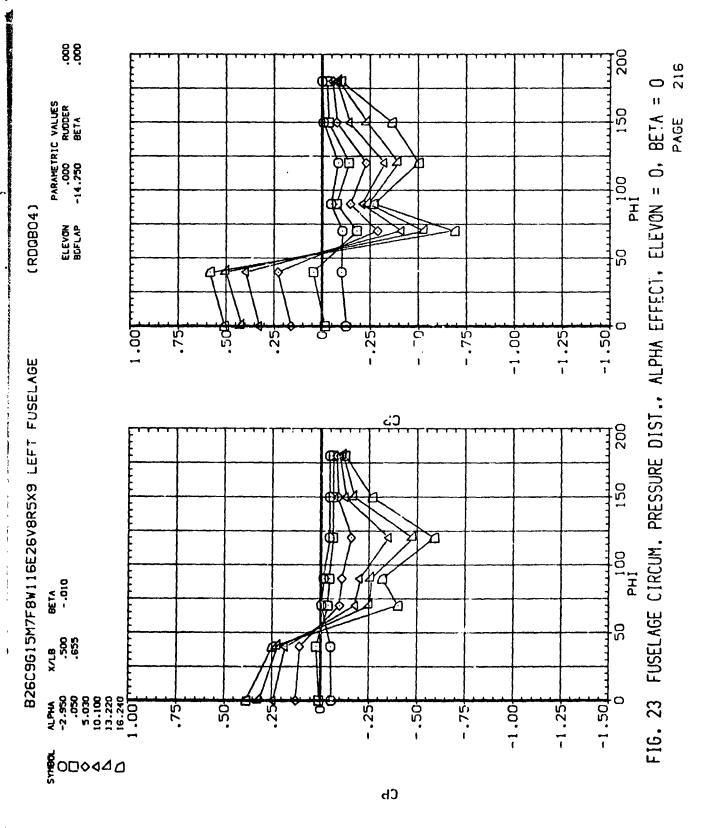




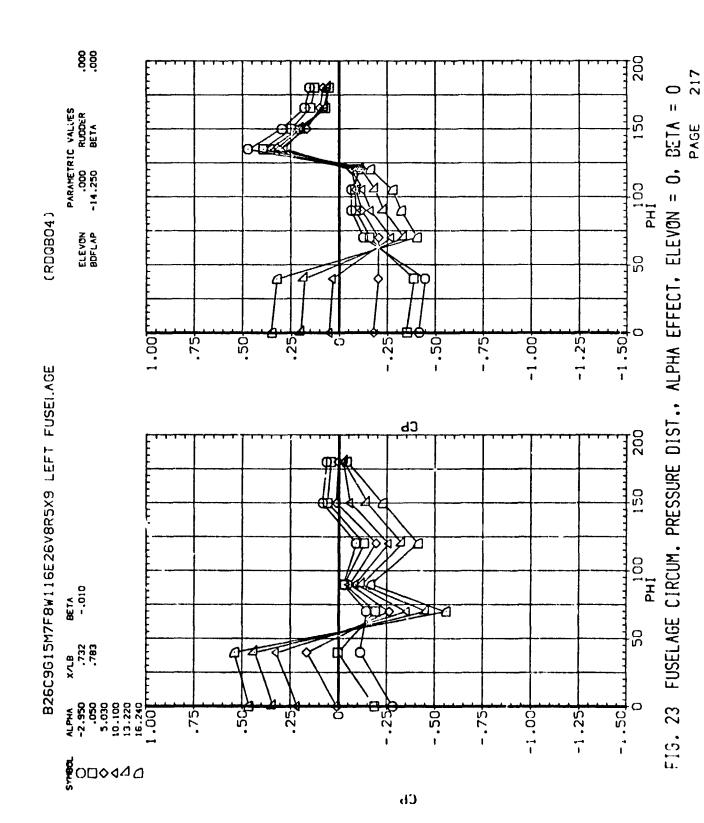
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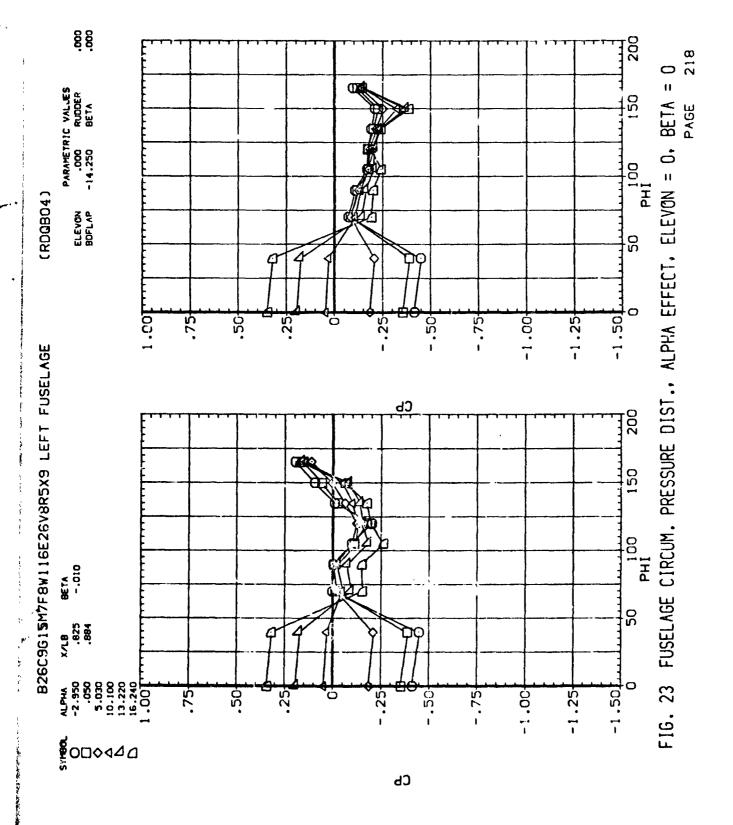
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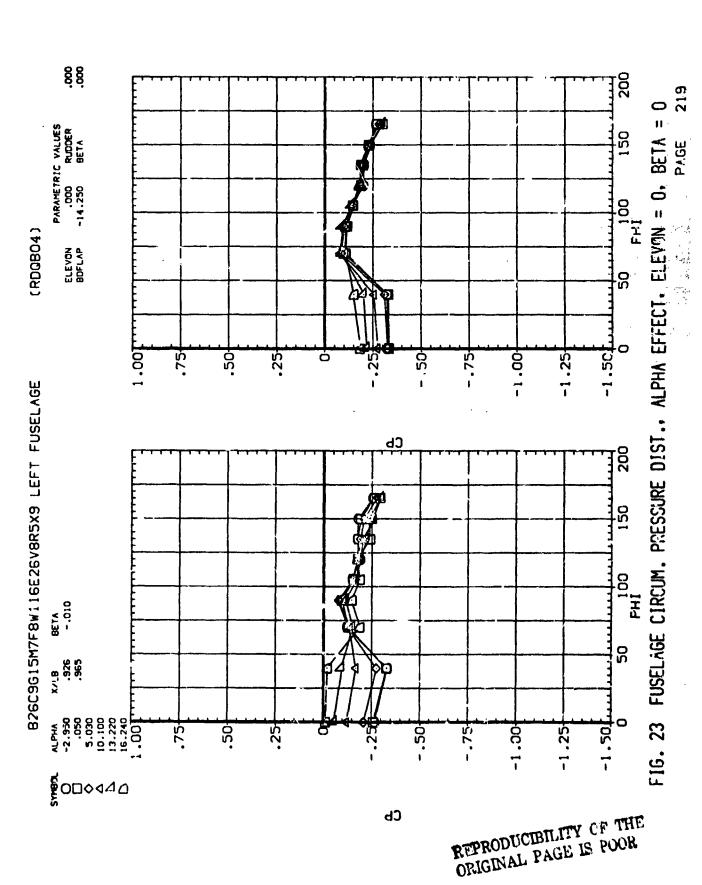


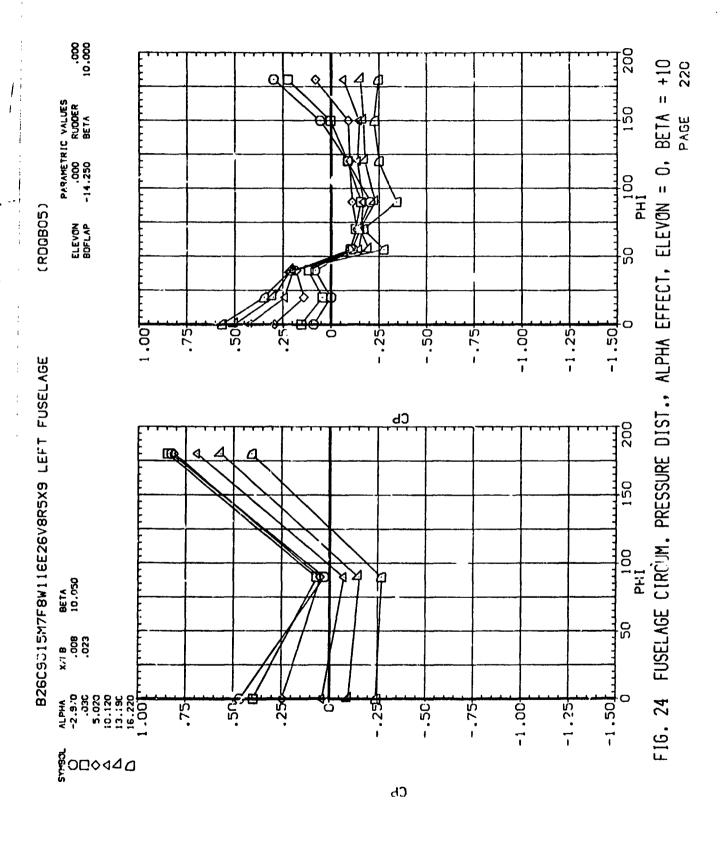
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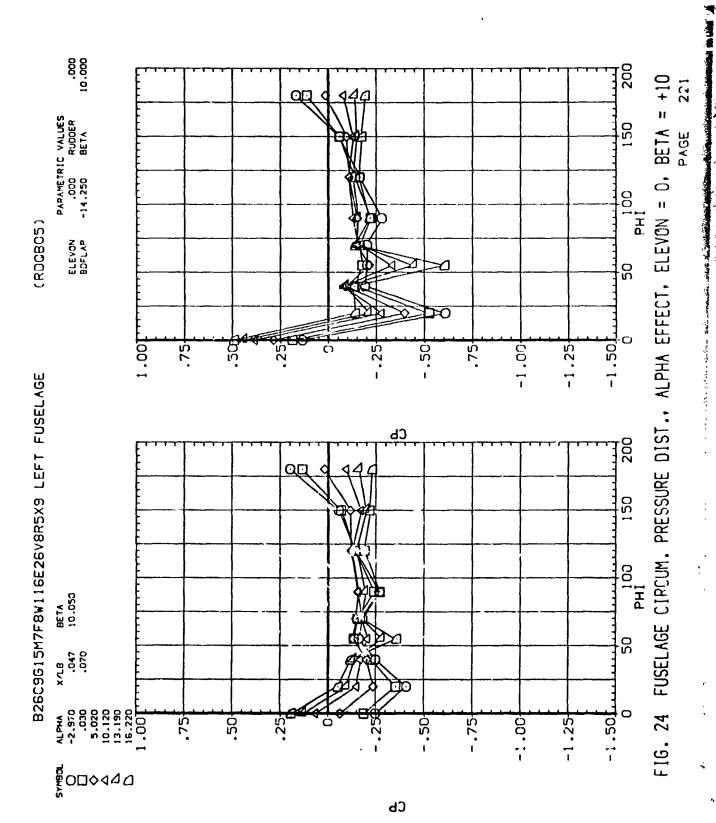


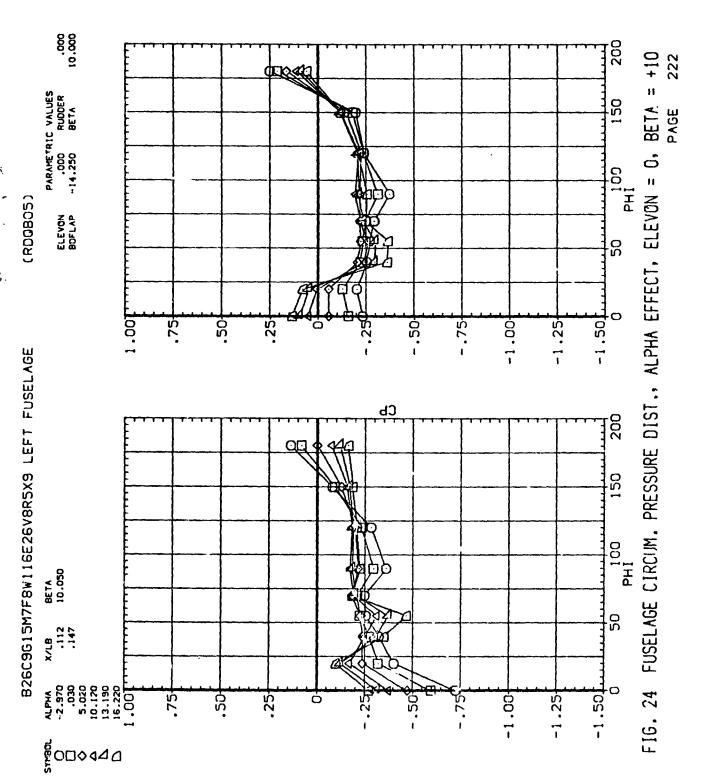
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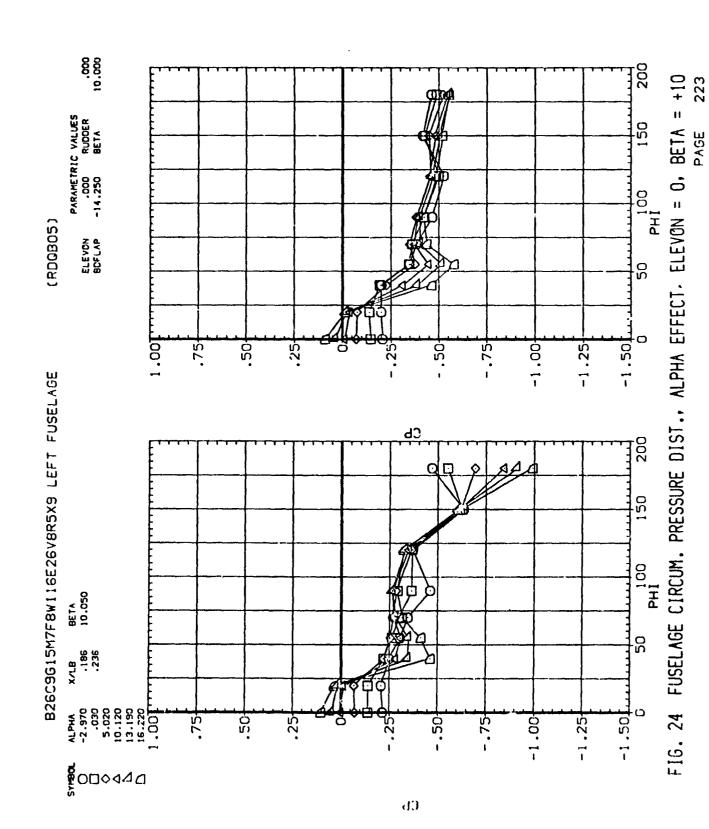




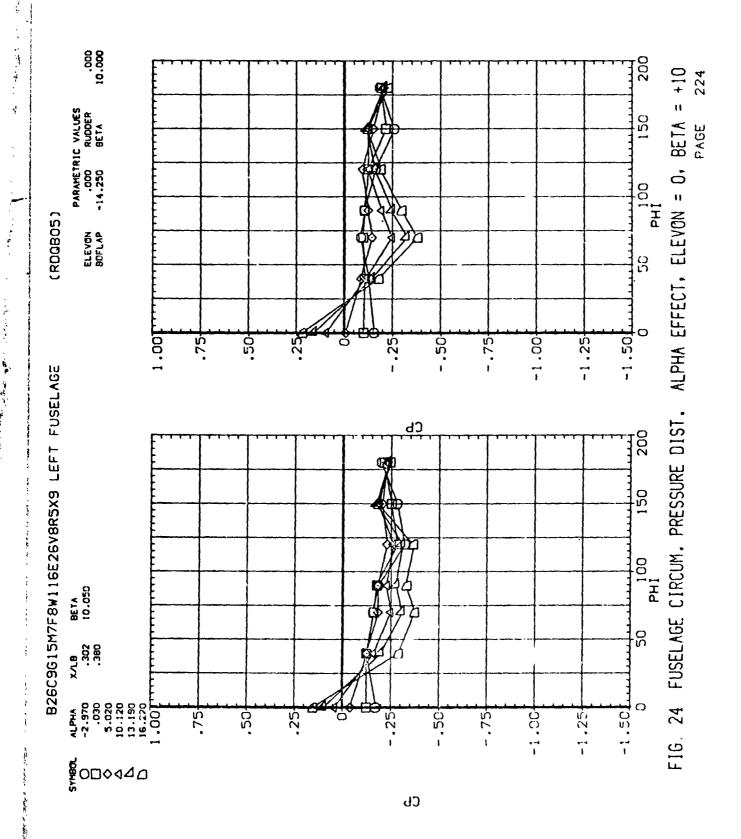


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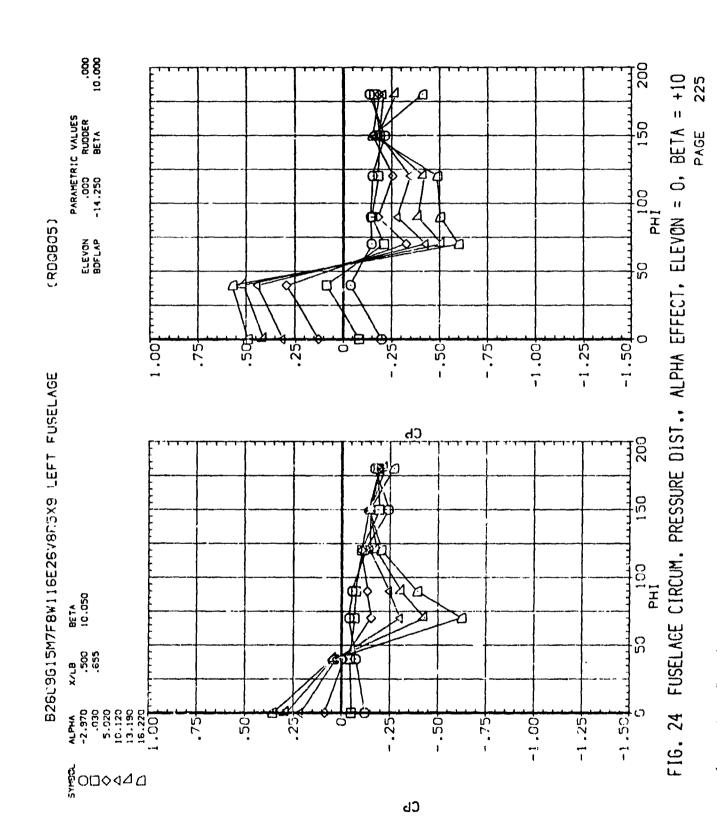
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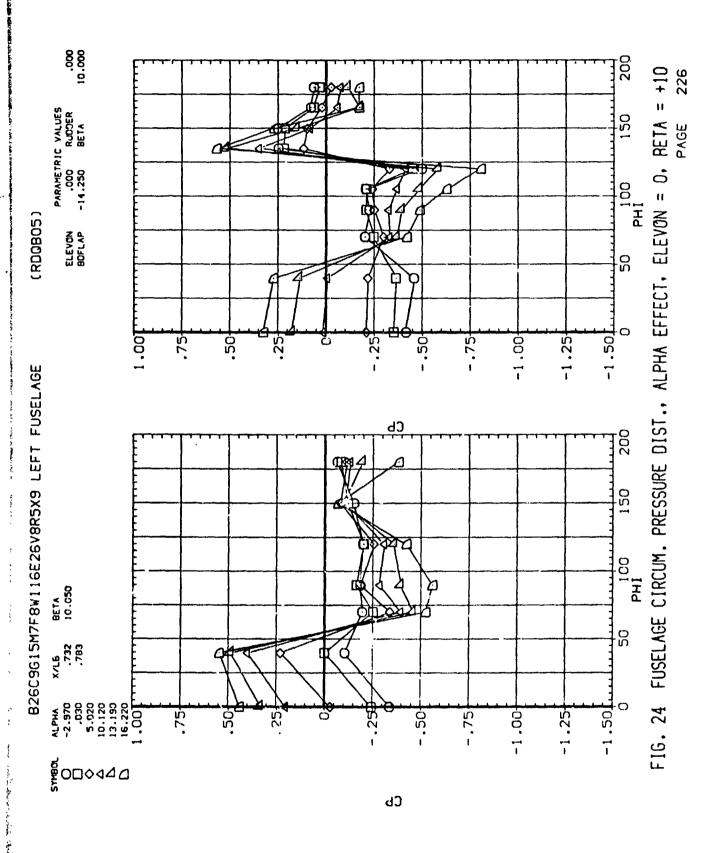
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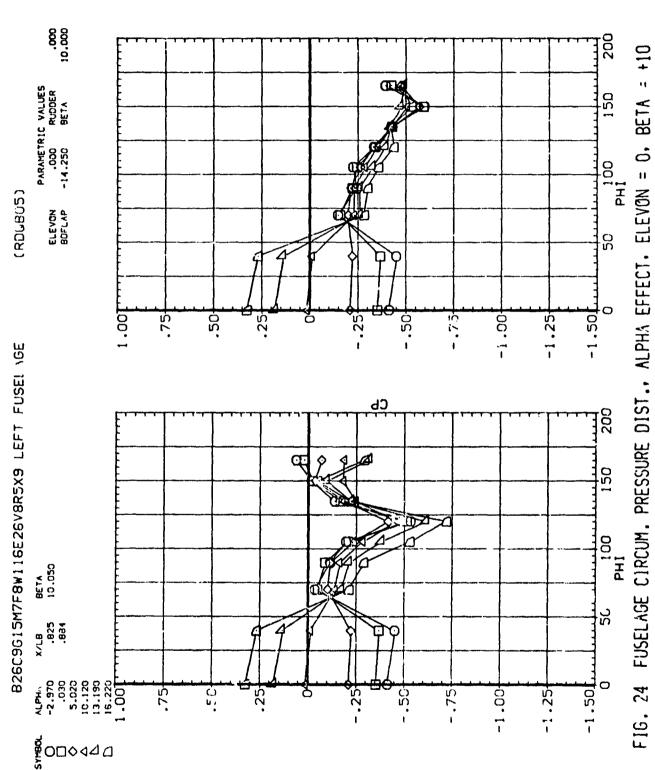


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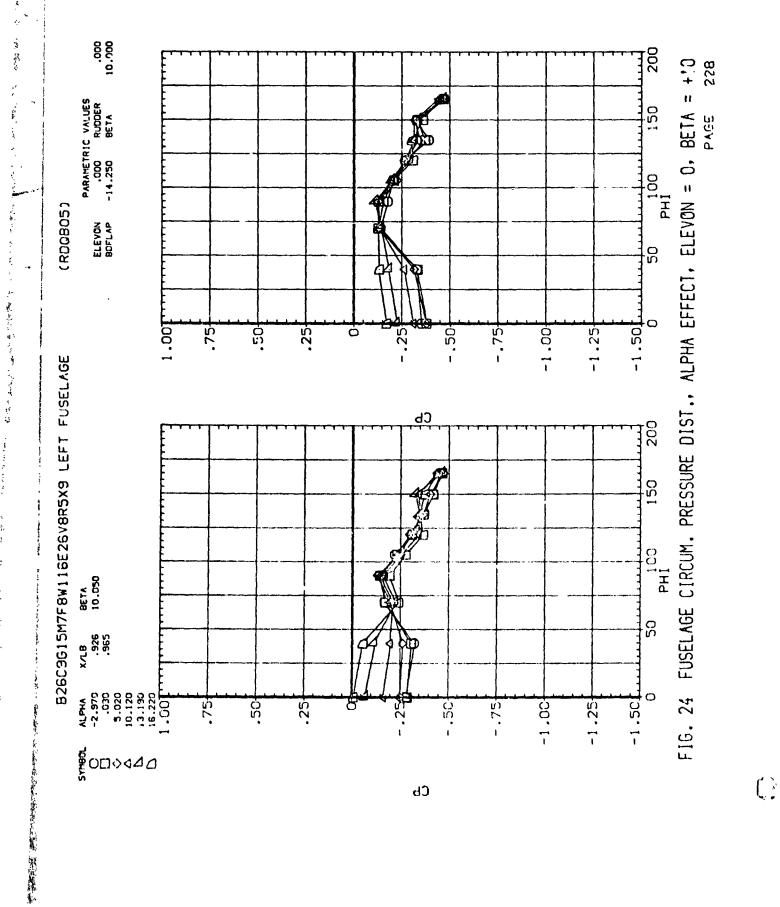




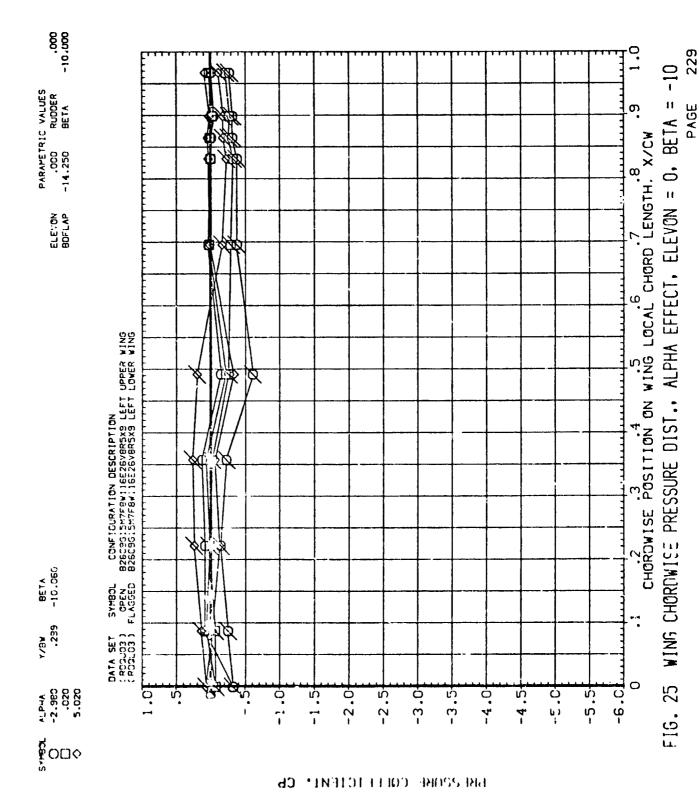
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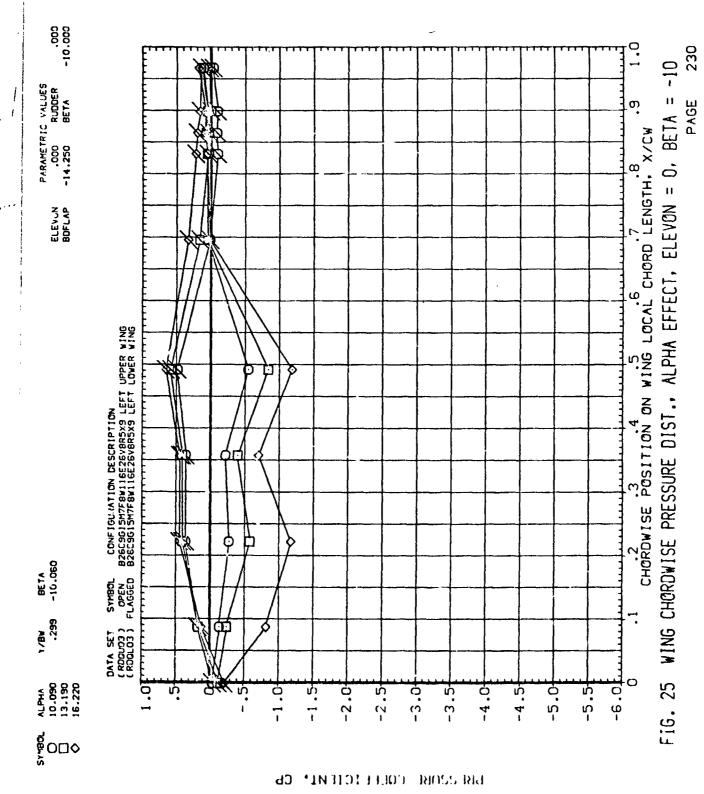
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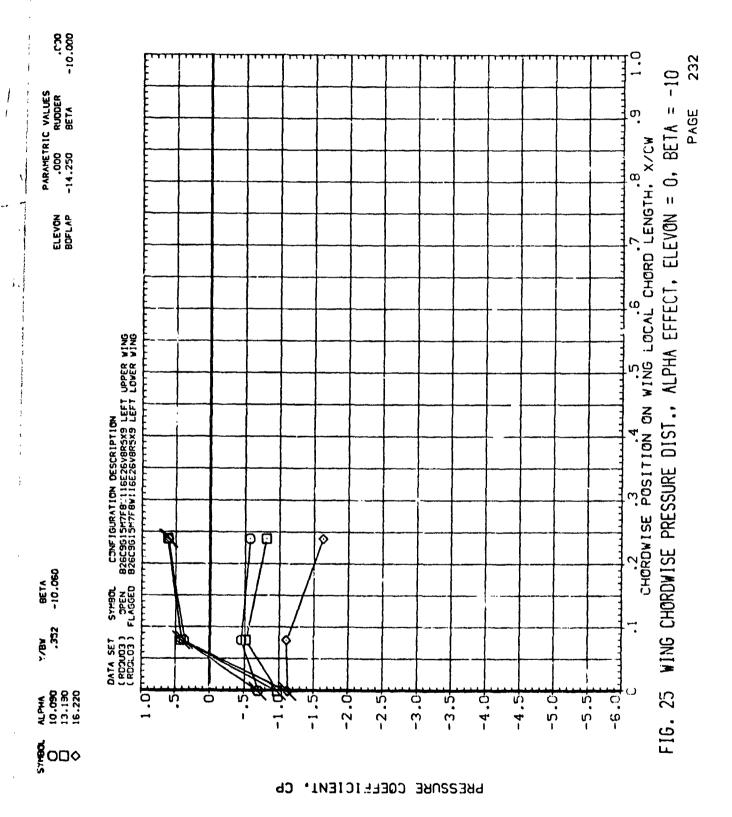
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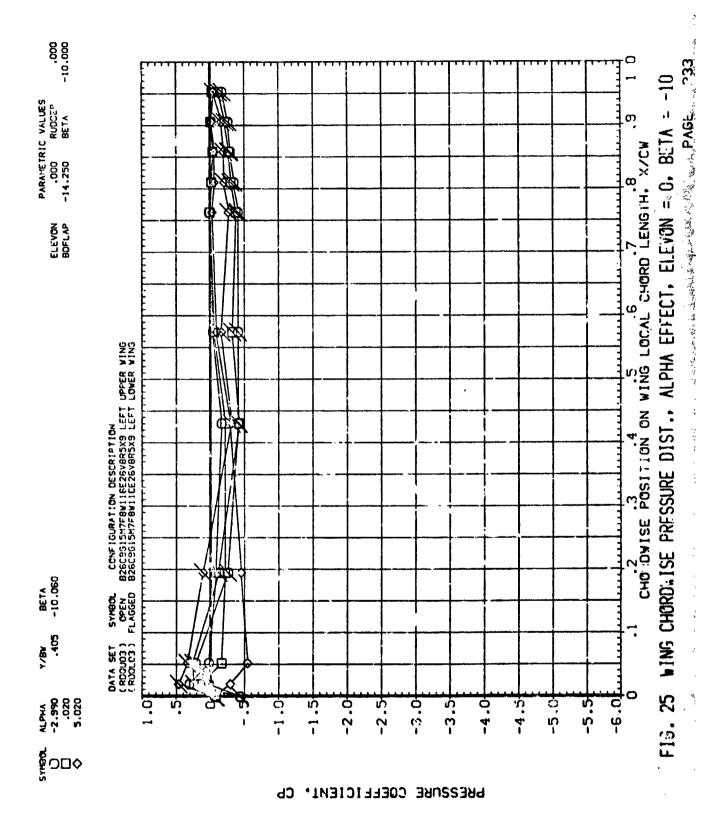
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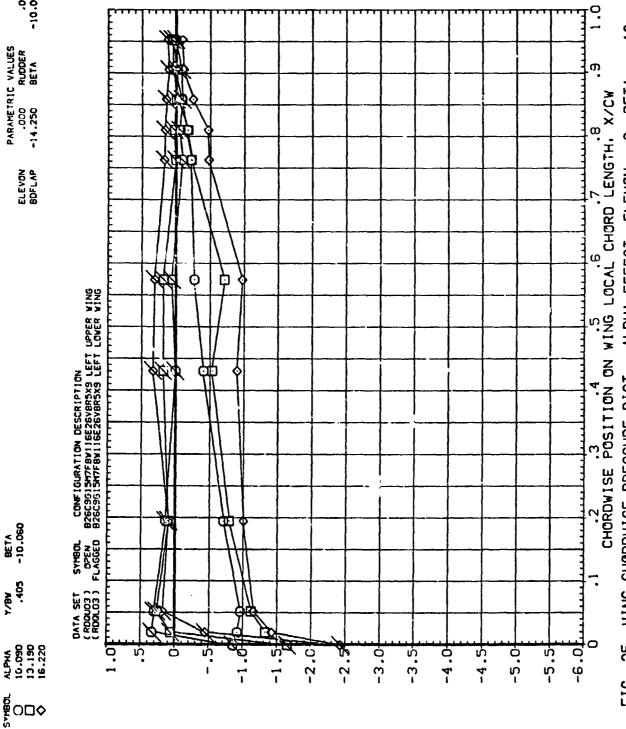








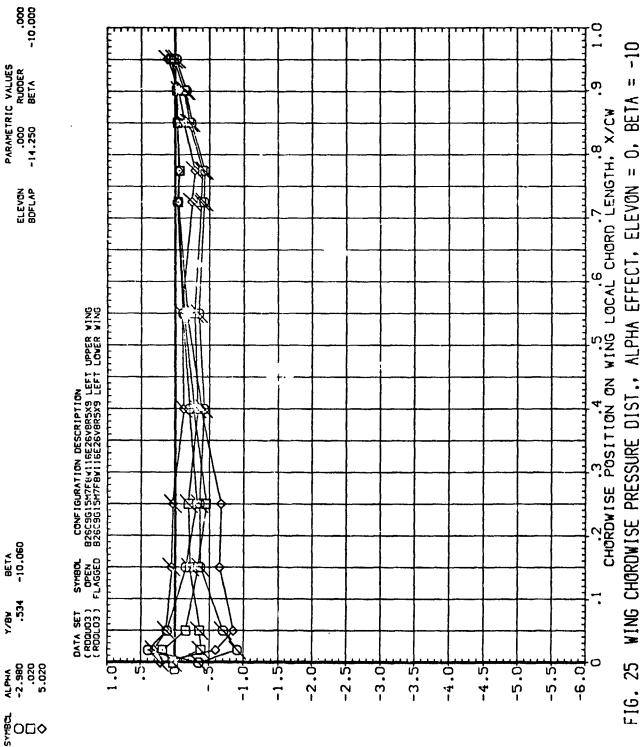




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FIG. 25 WING CHORDWISE PRESSURE DIST., ALPHA EFFECT, ELEVON = 0, BETA = -10

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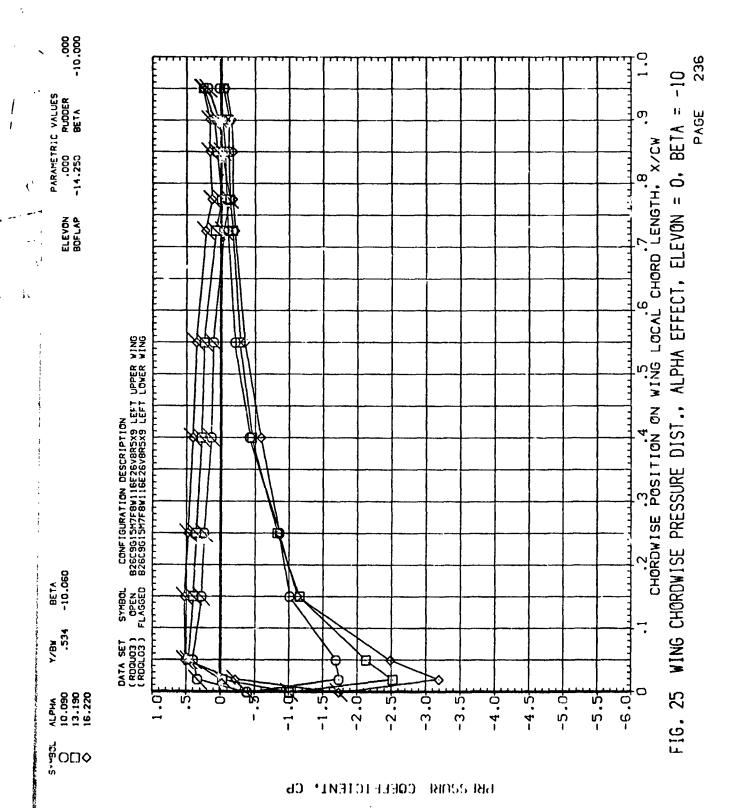
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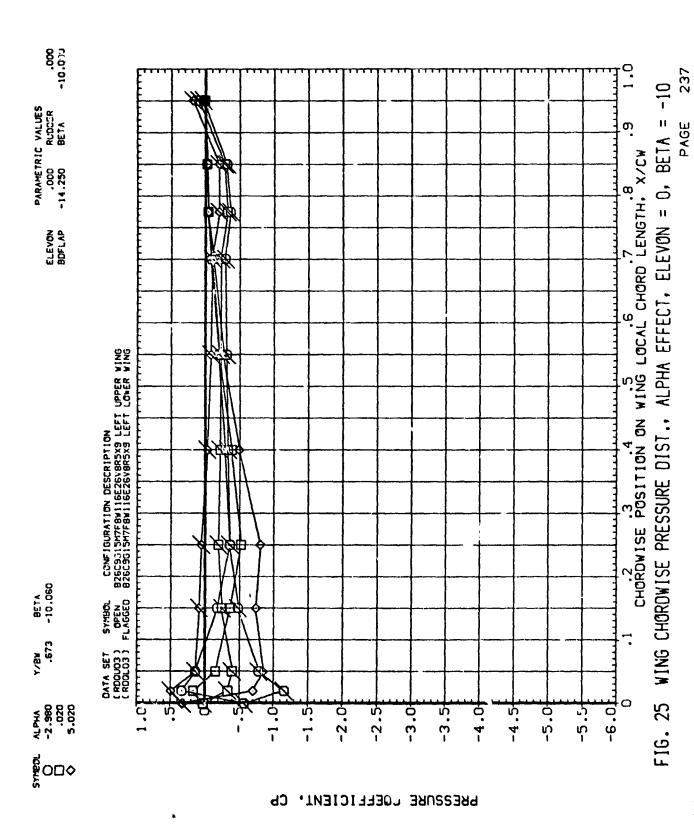
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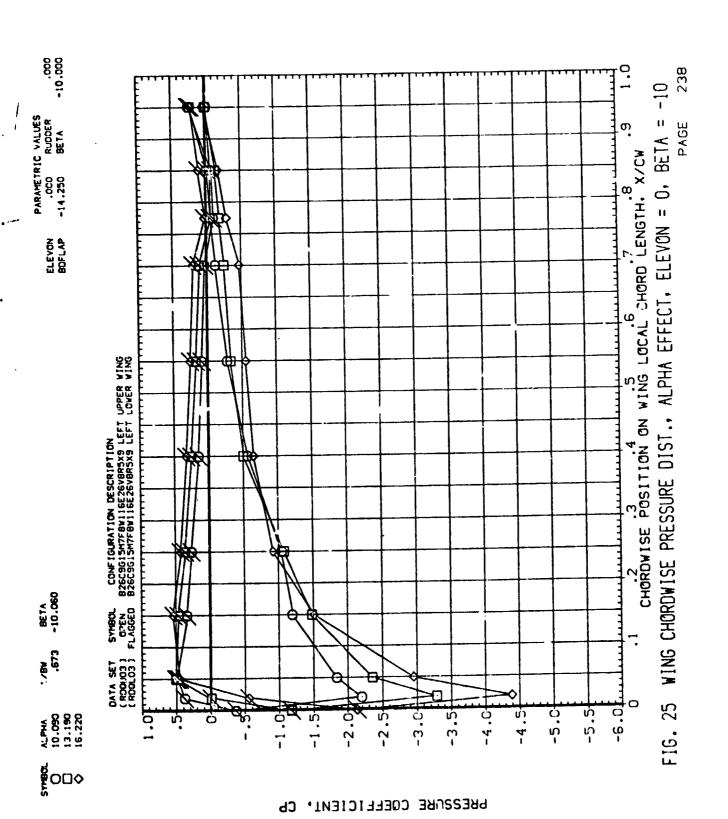
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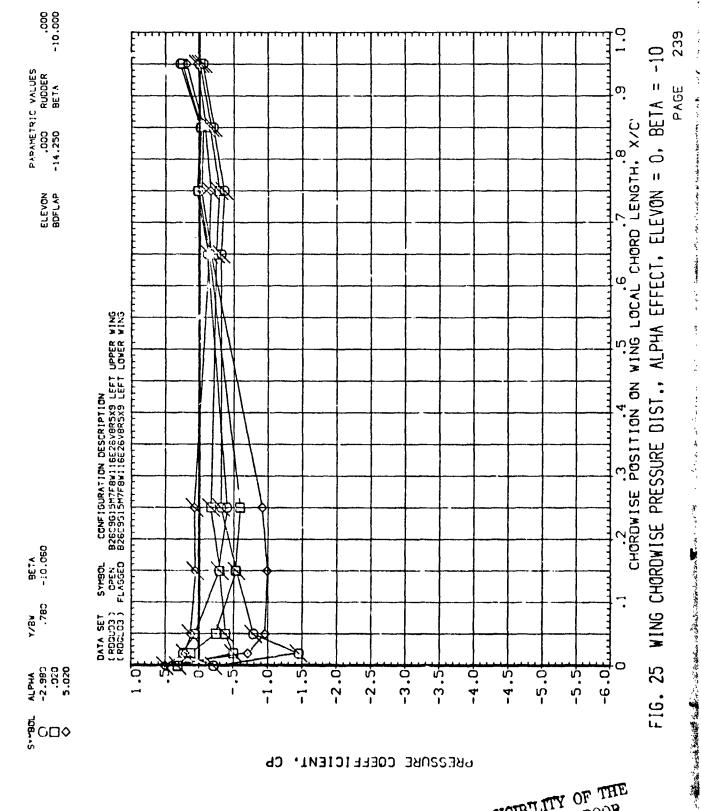
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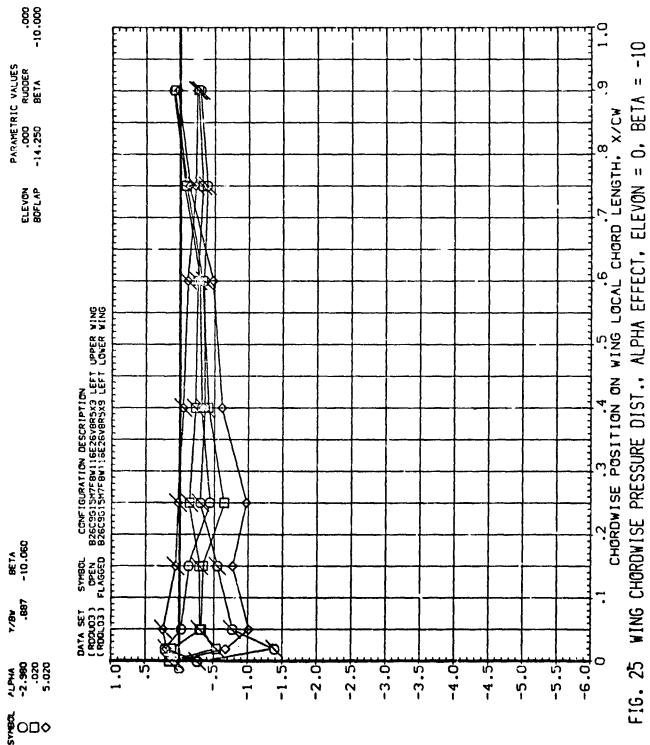
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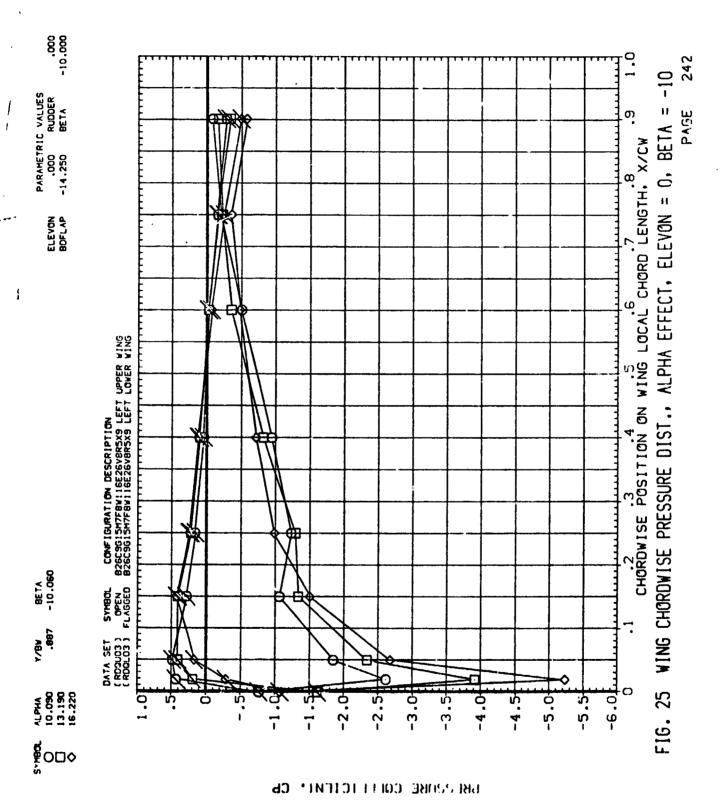
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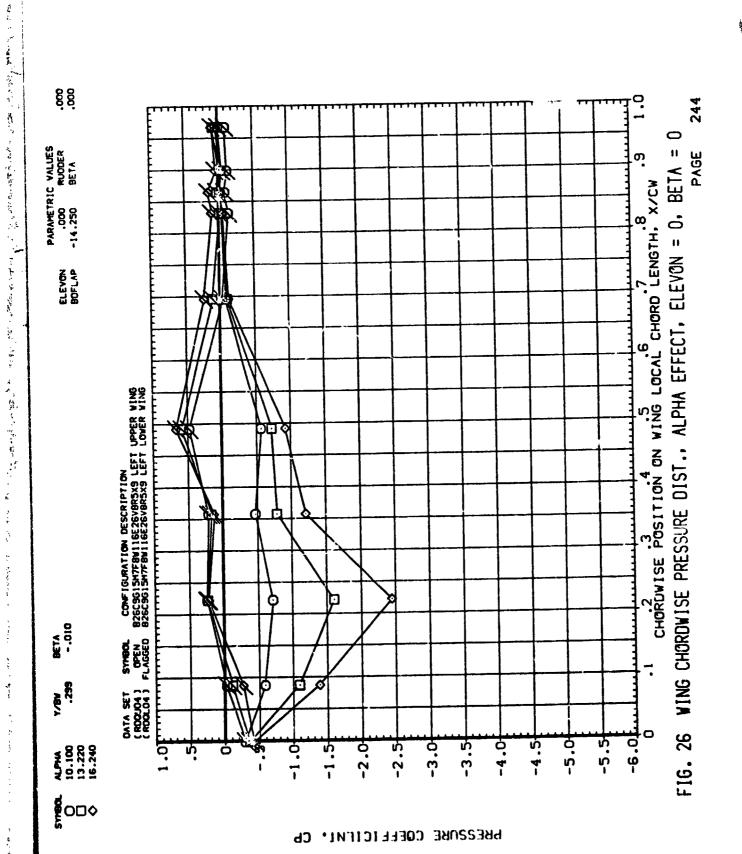
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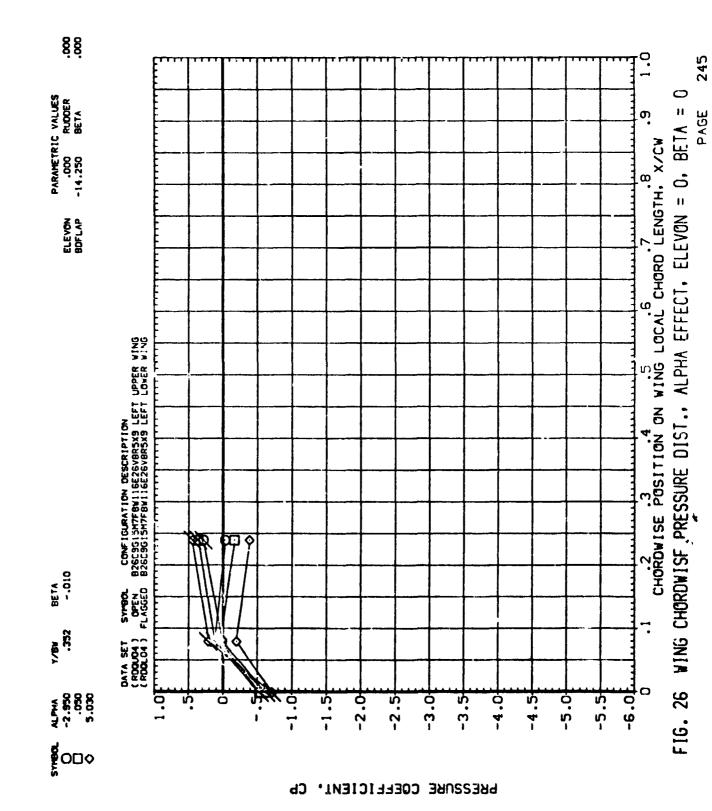
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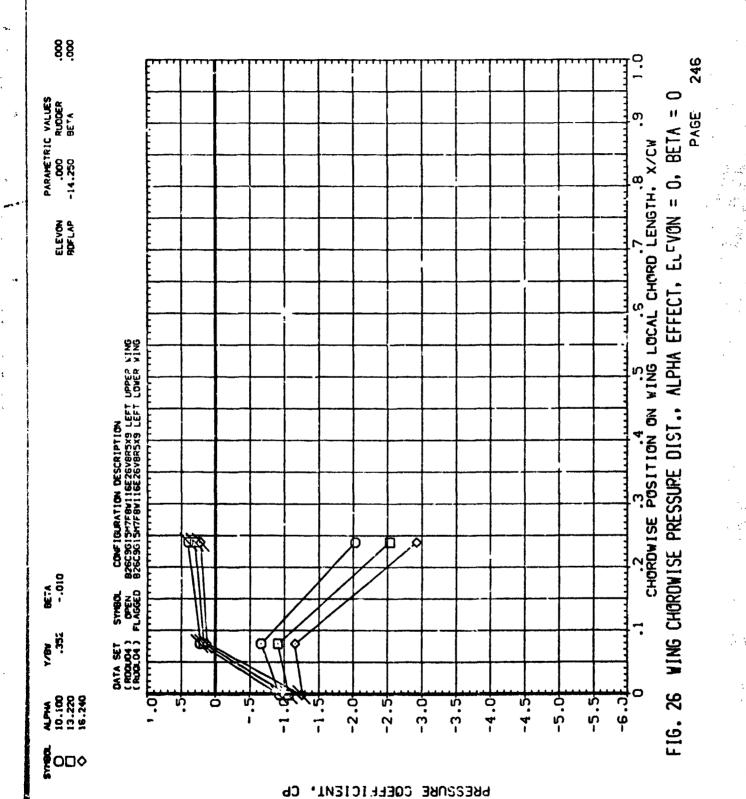


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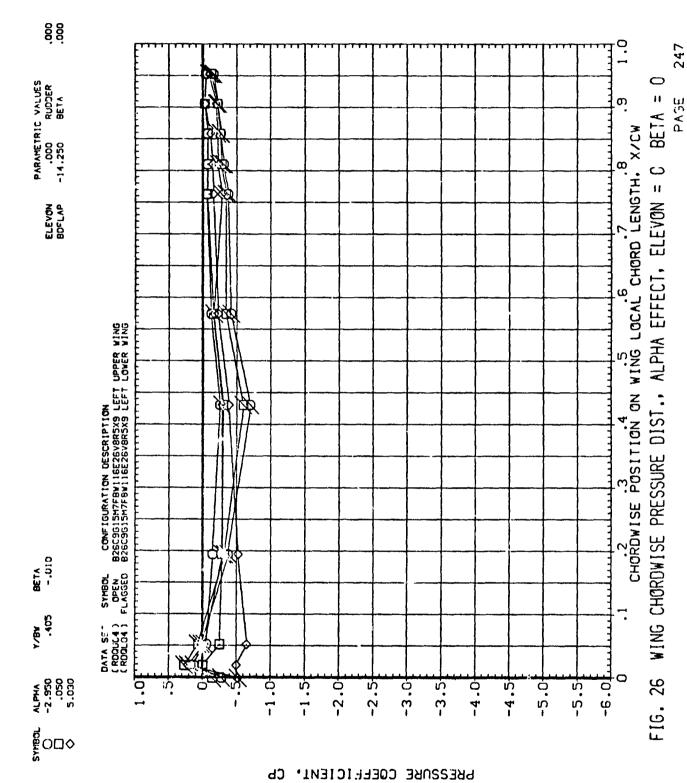
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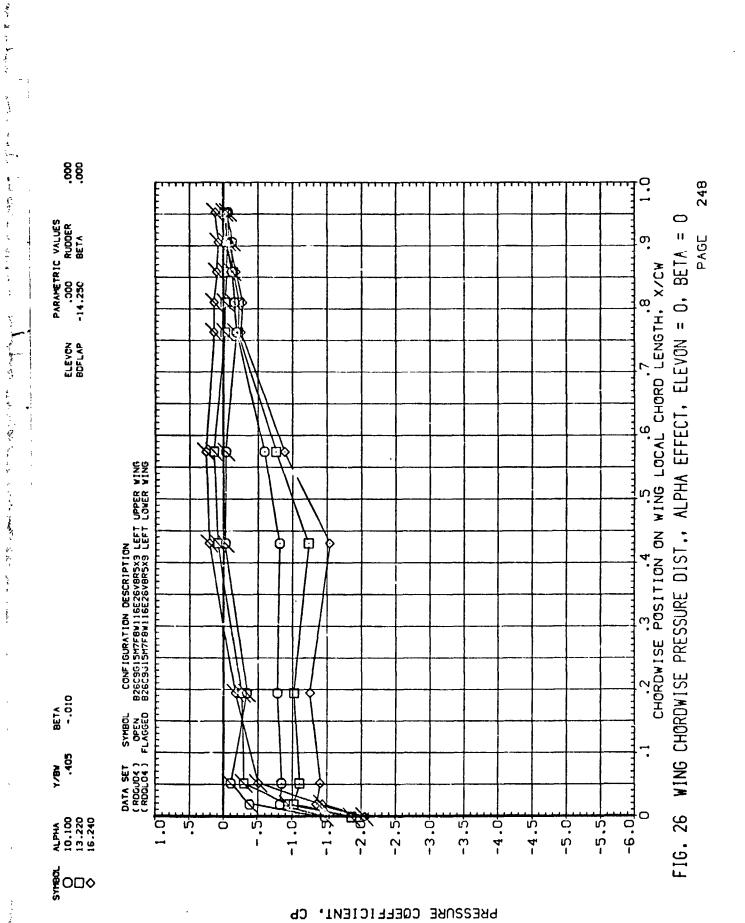
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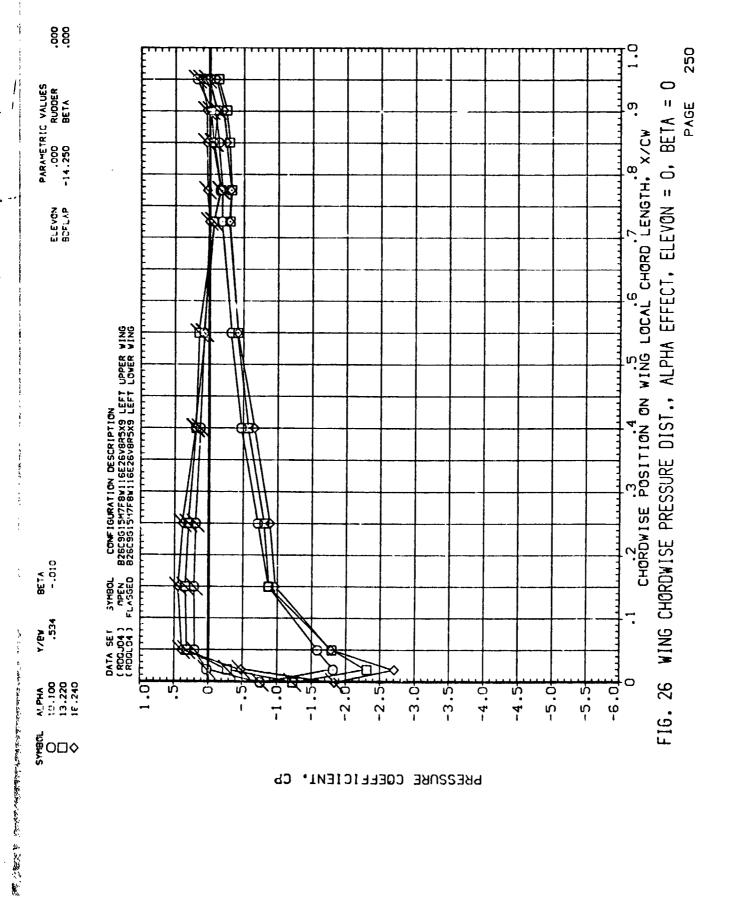


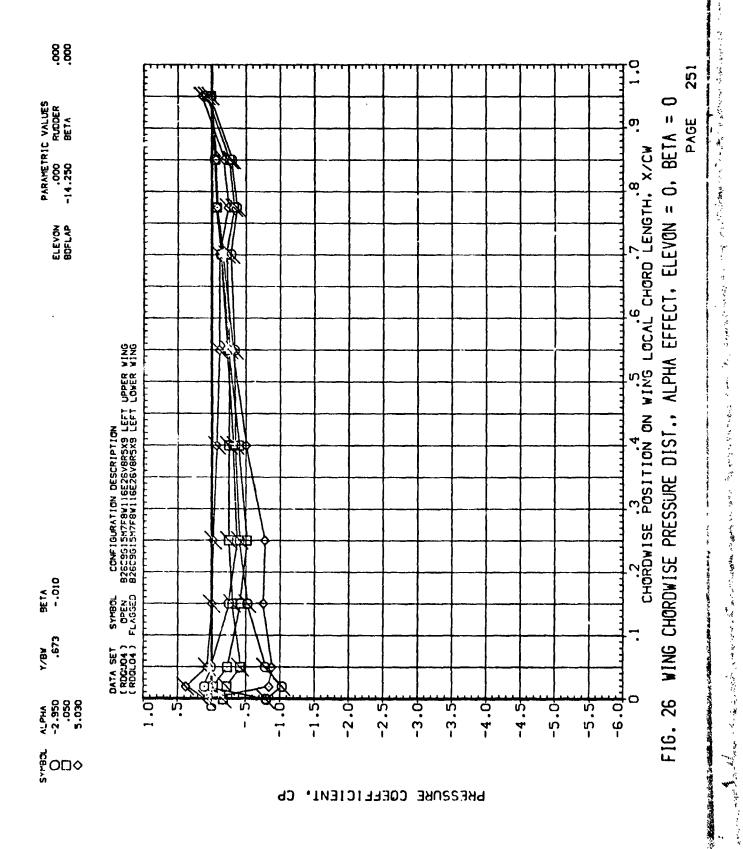
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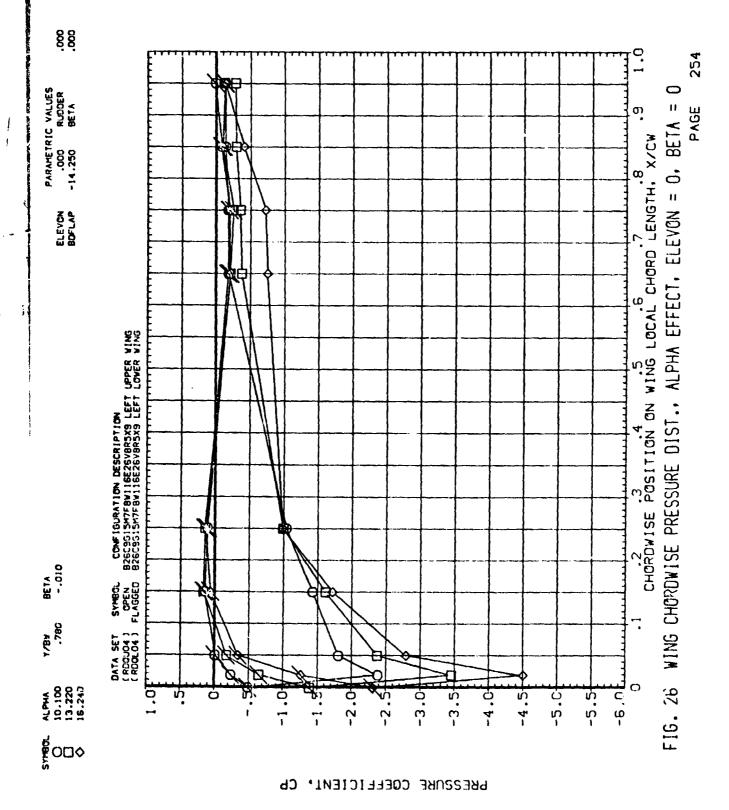
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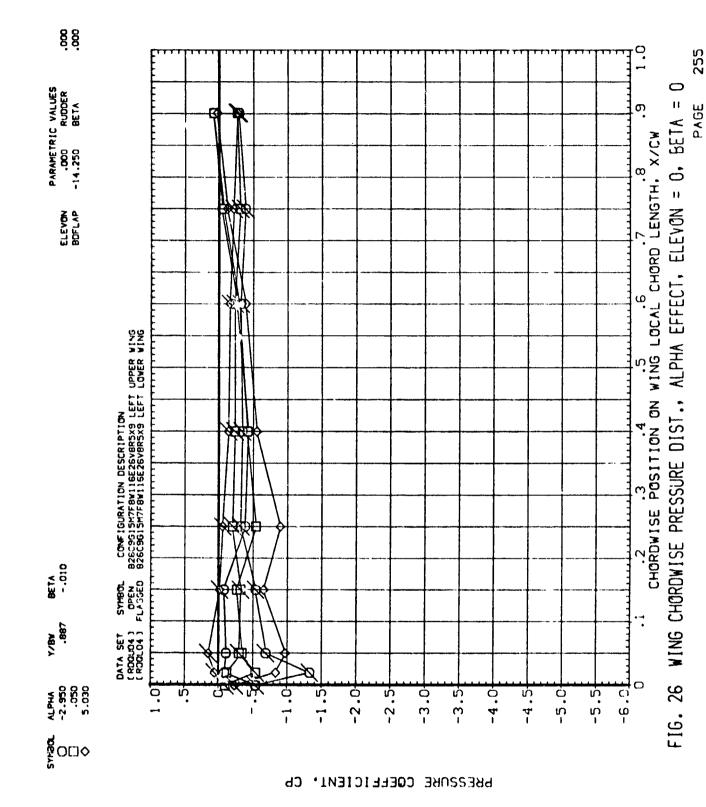
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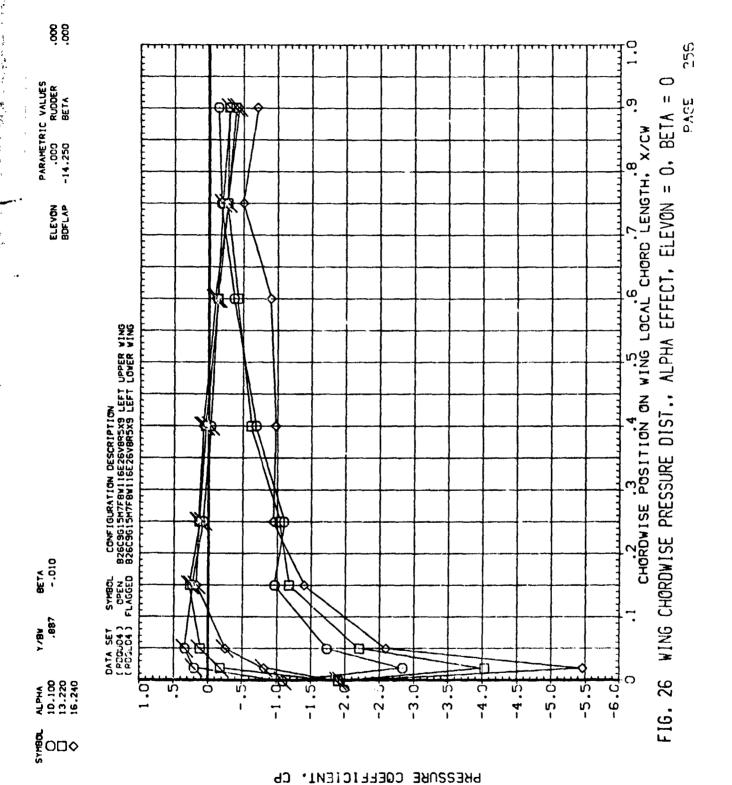
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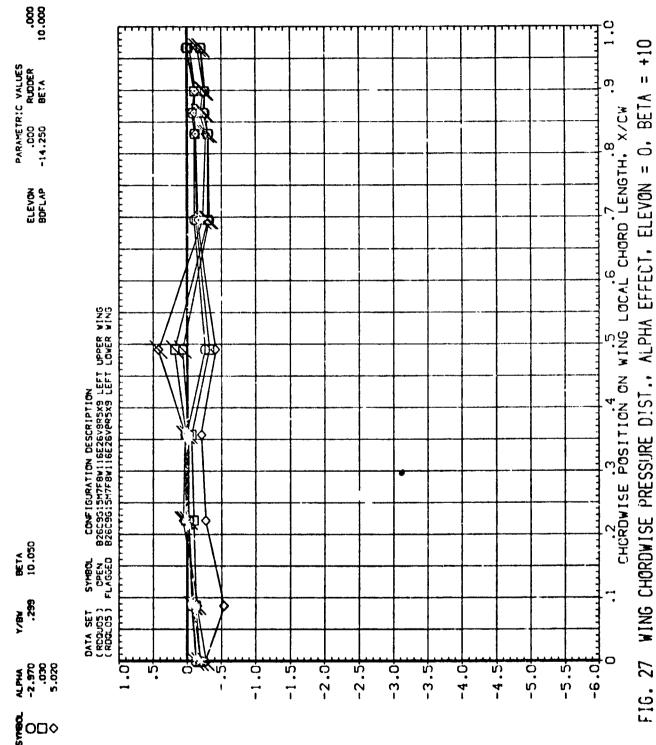


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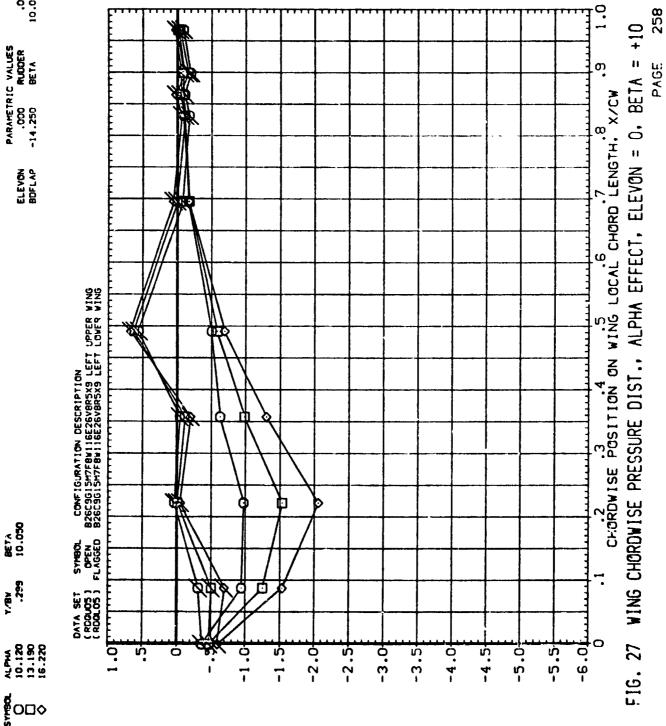
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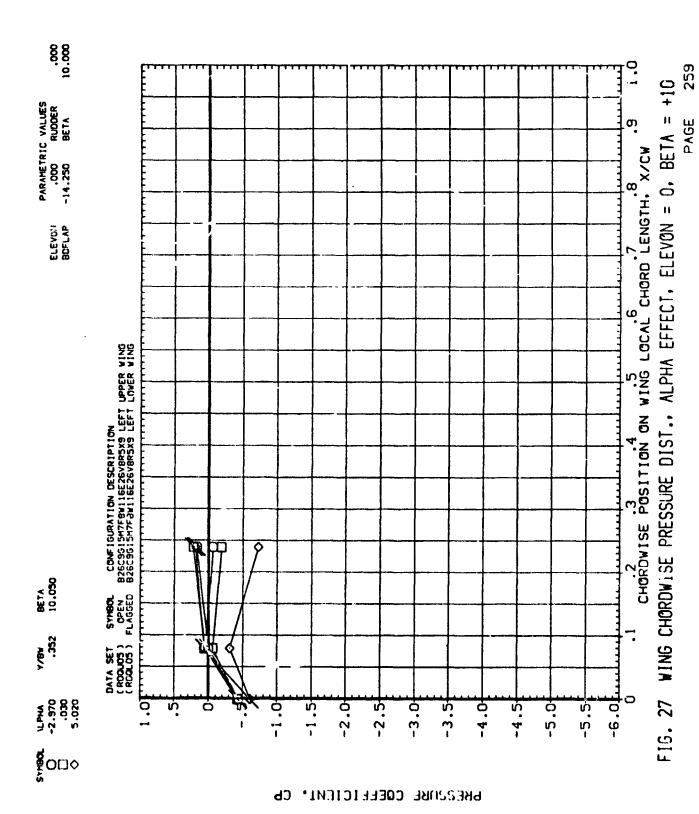




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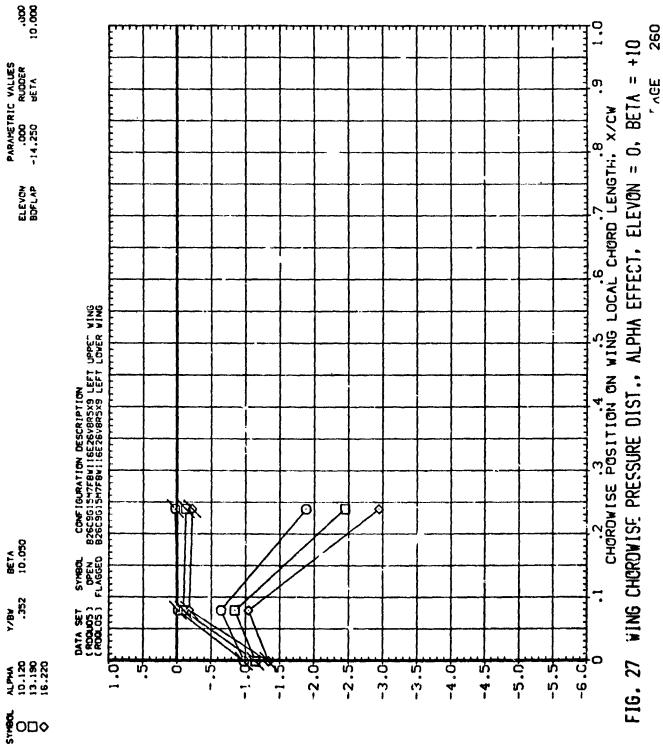
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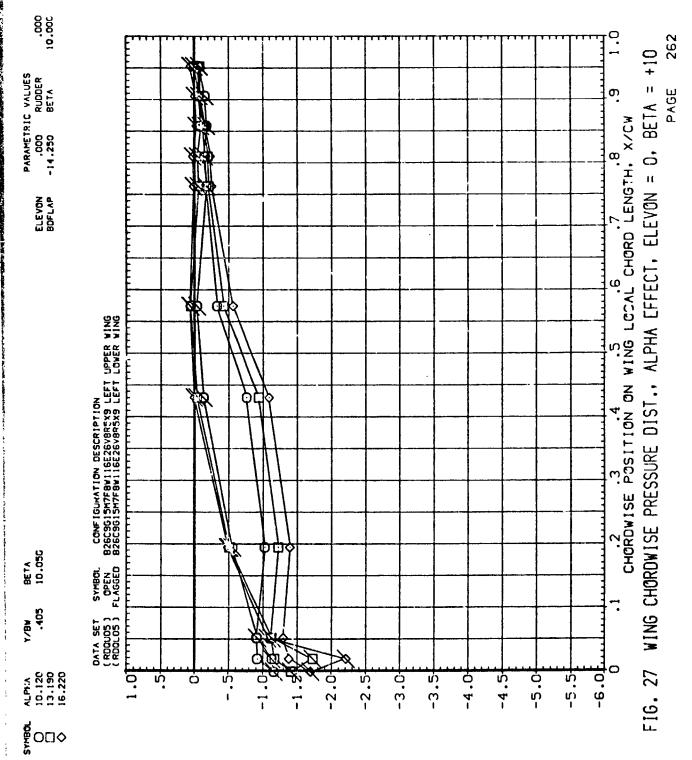
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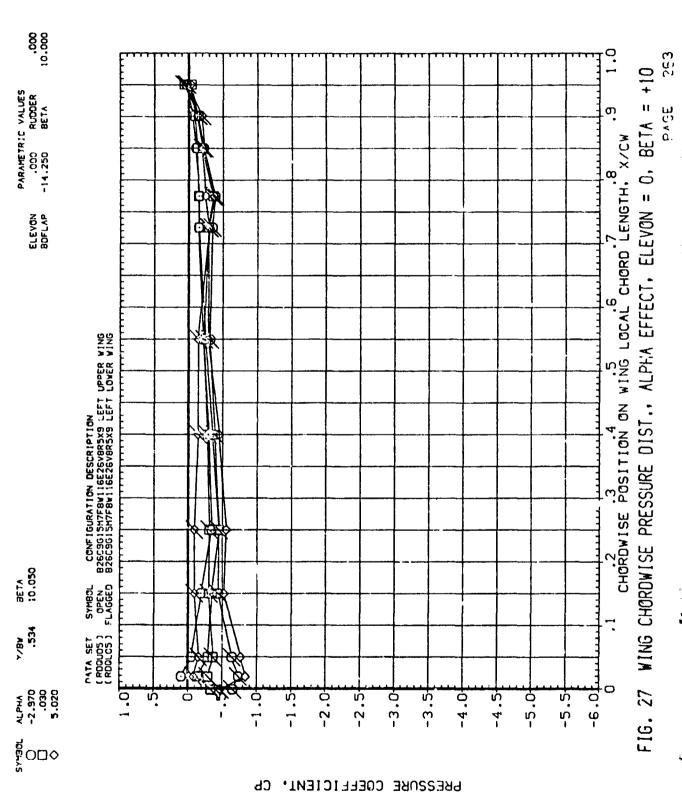
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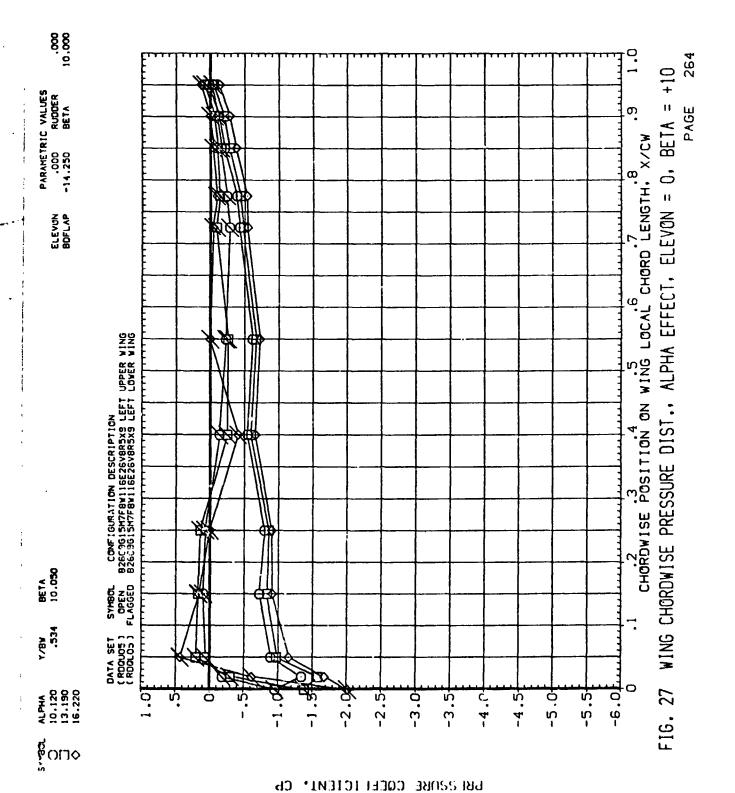
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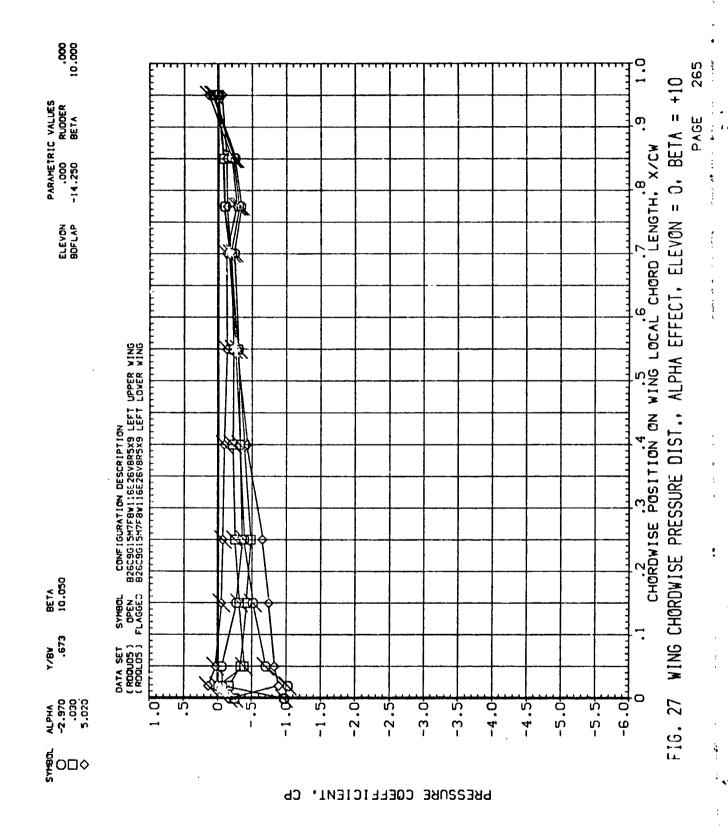


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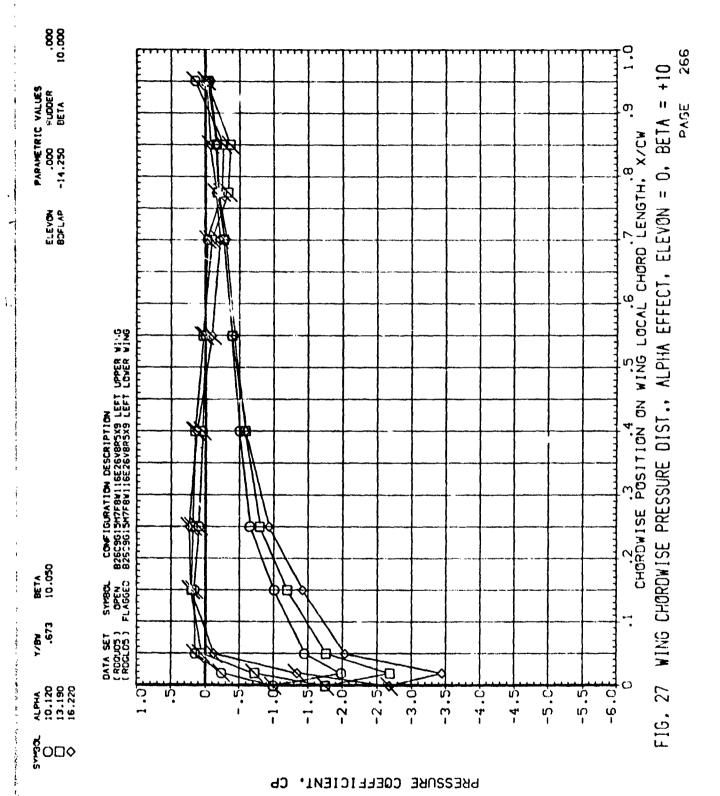
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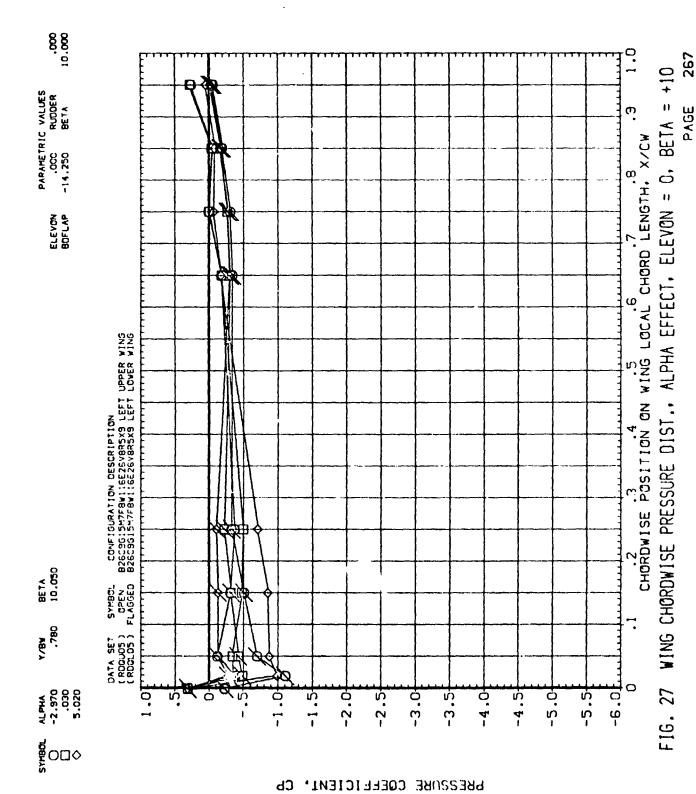






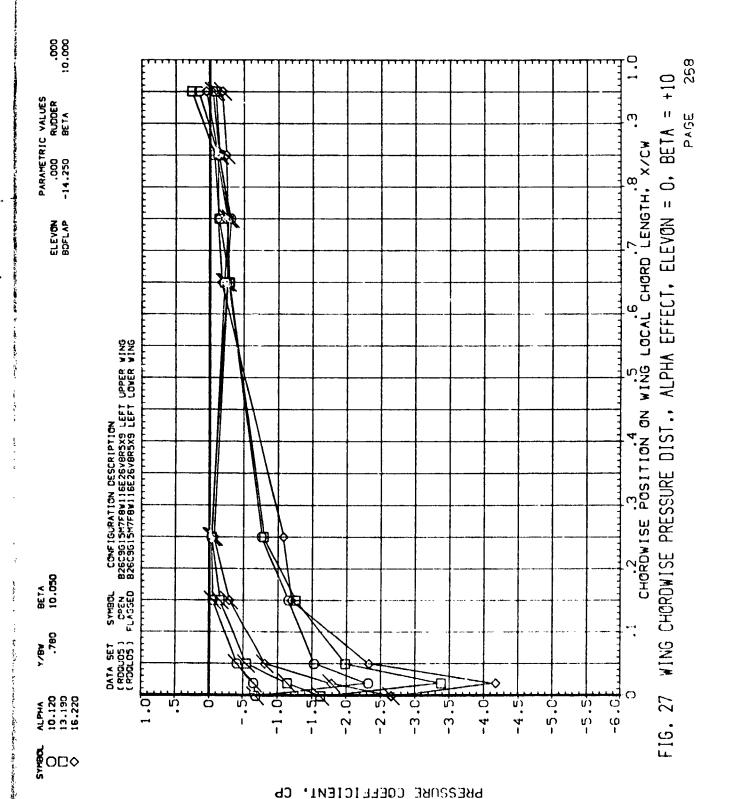
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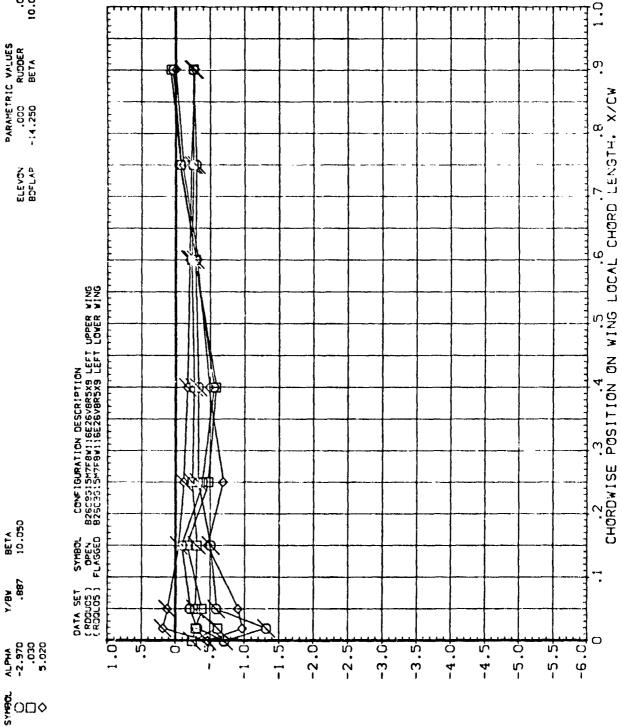


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FIG. 27 WING CHORDWISE PRESSURE DIST., ALPHA EFFECT, ELEVON = C. BETA = +10 -4.5 -5.0 -5.5 0.9-

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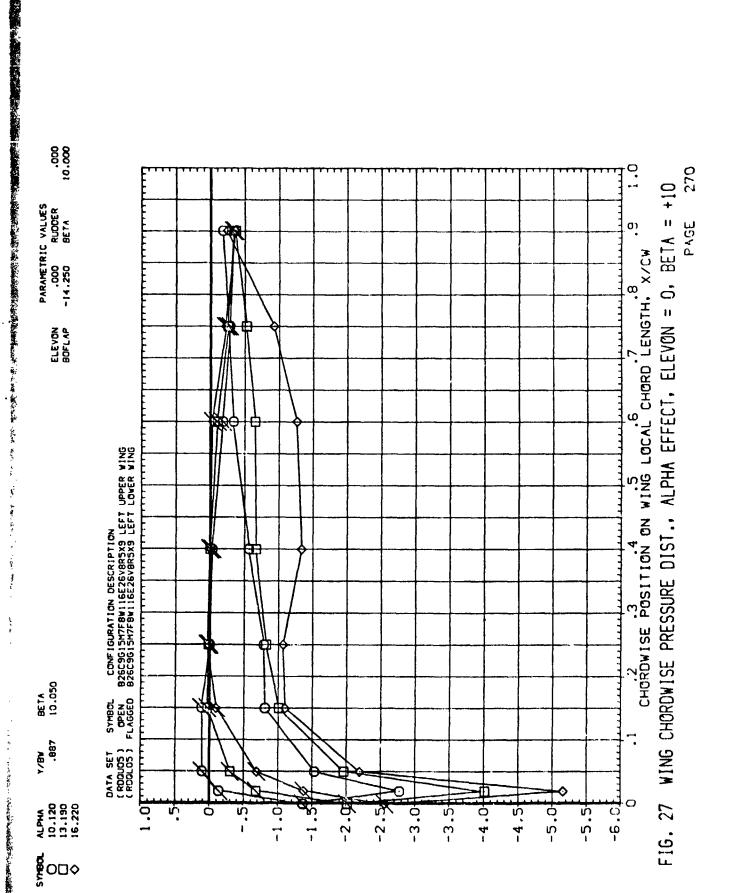


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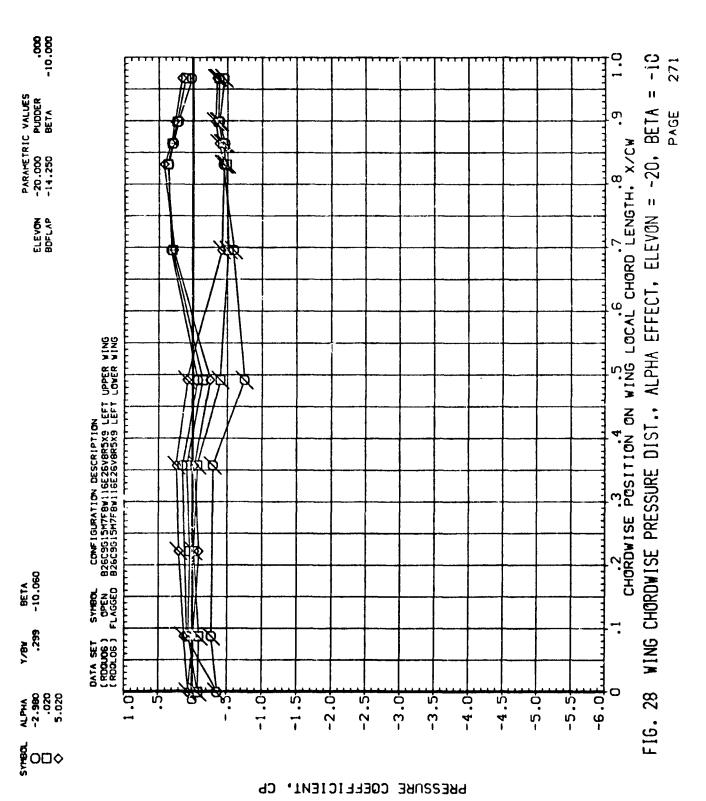
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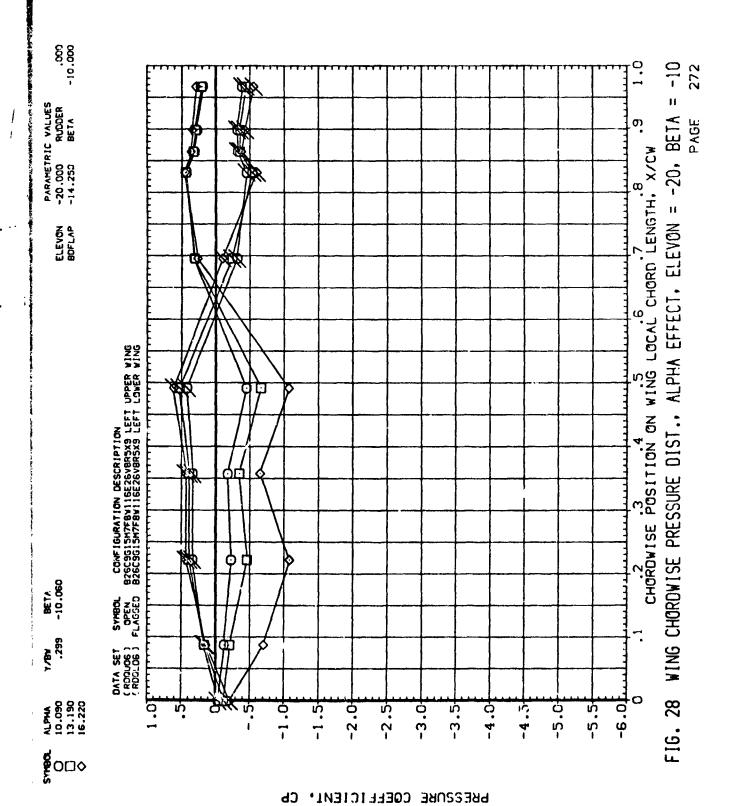
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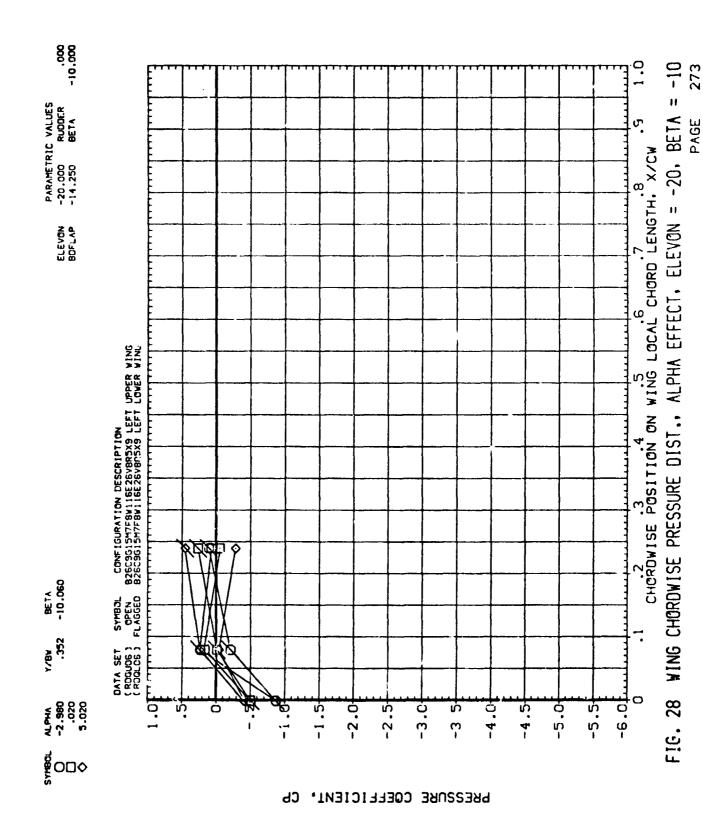
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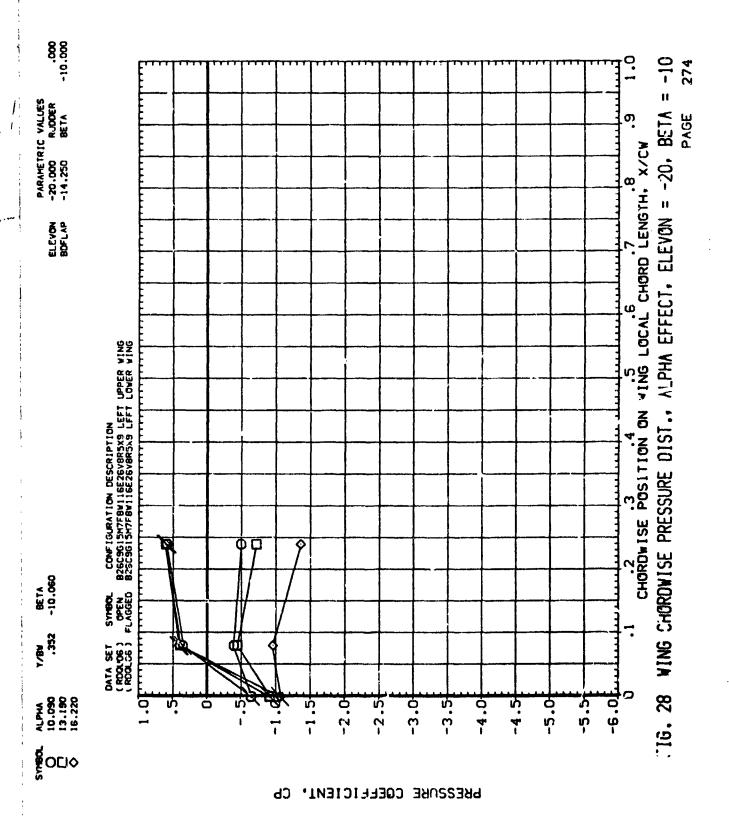


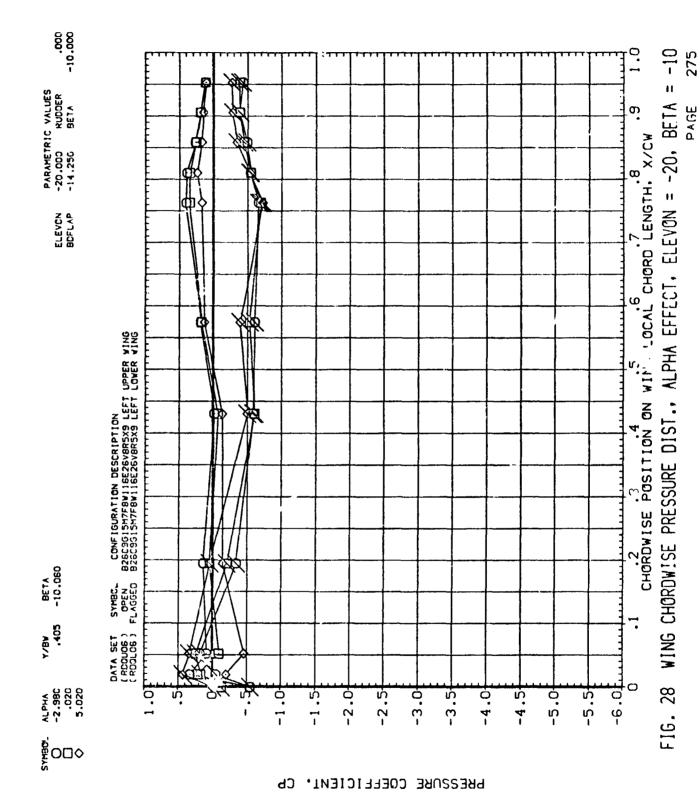
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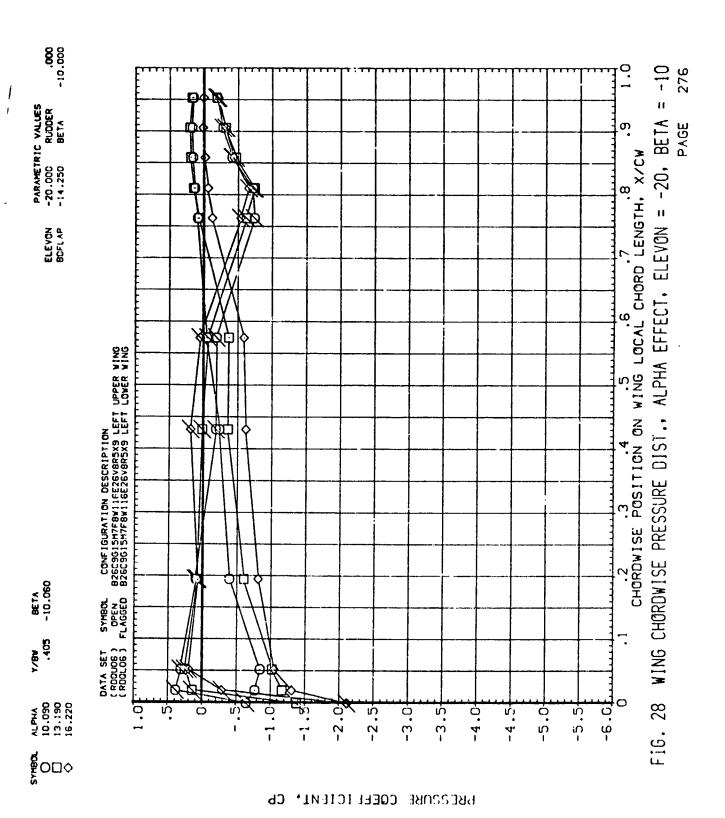
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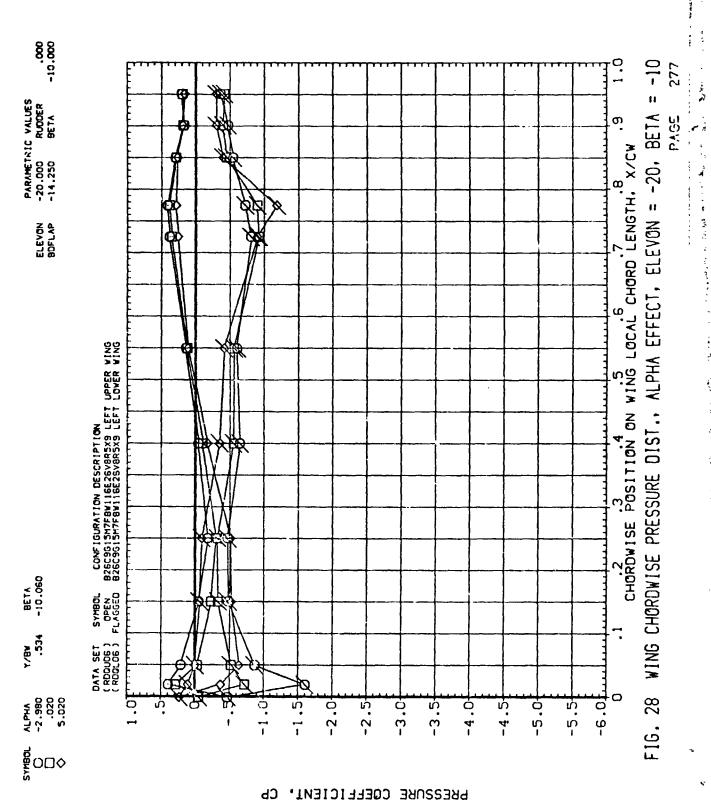
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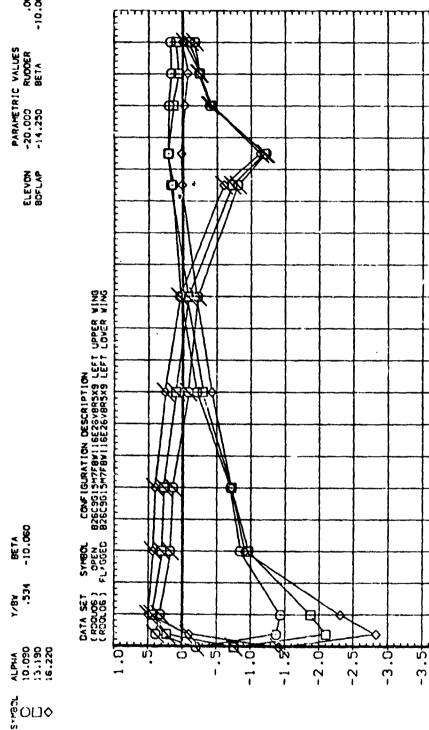
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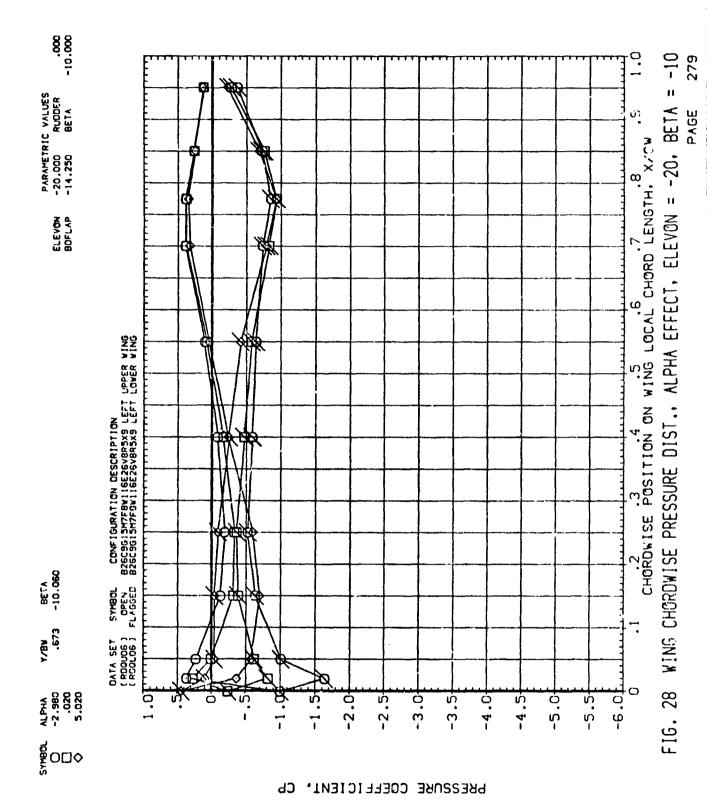
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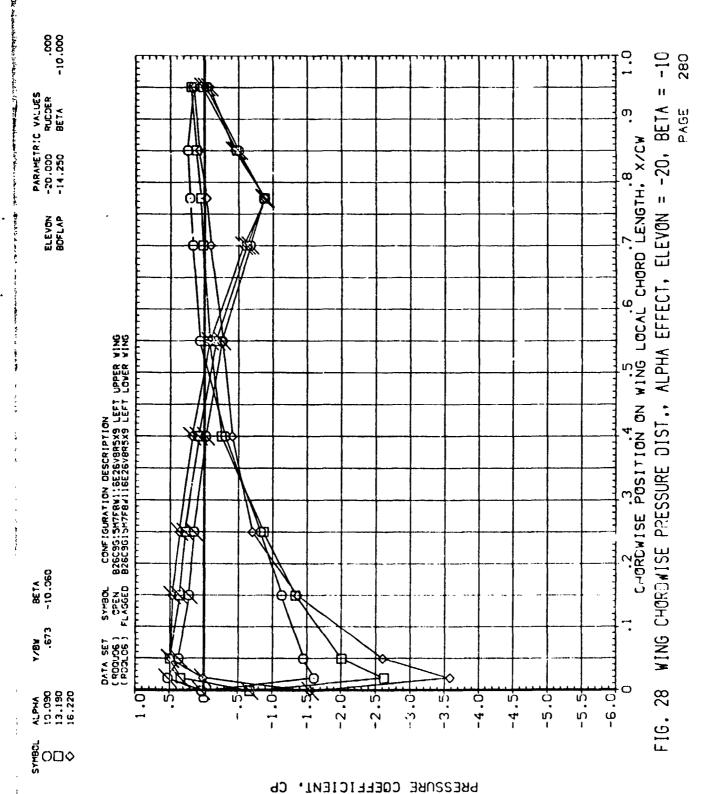
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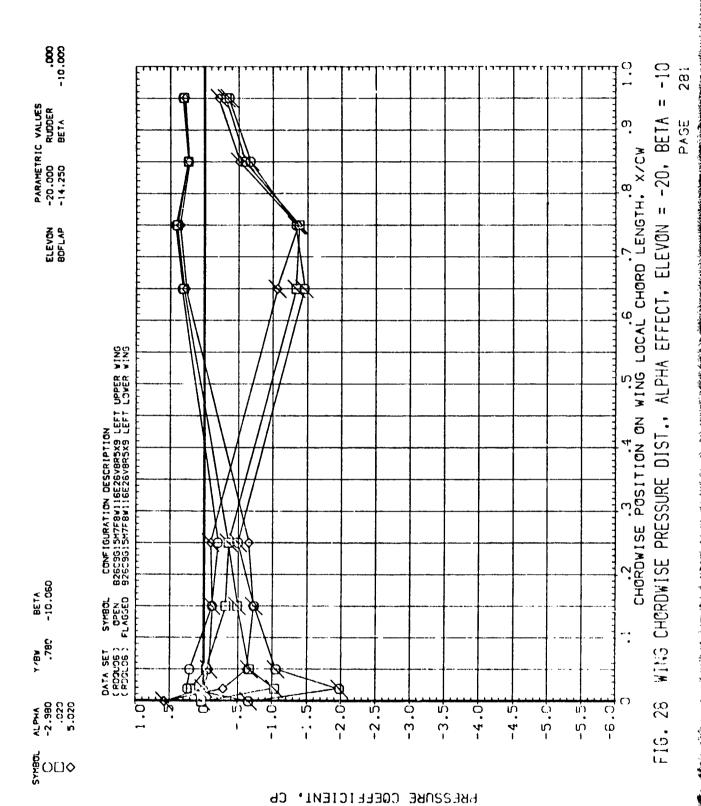
WING CHORDWISE PRESSURE DIST., ALPHA EFFECT, ELEVON = -20, BETA = PAGE

FIG. 28

CHORDWISE POSITION ON WING LOCAL CHORD LENGTH, X/CW





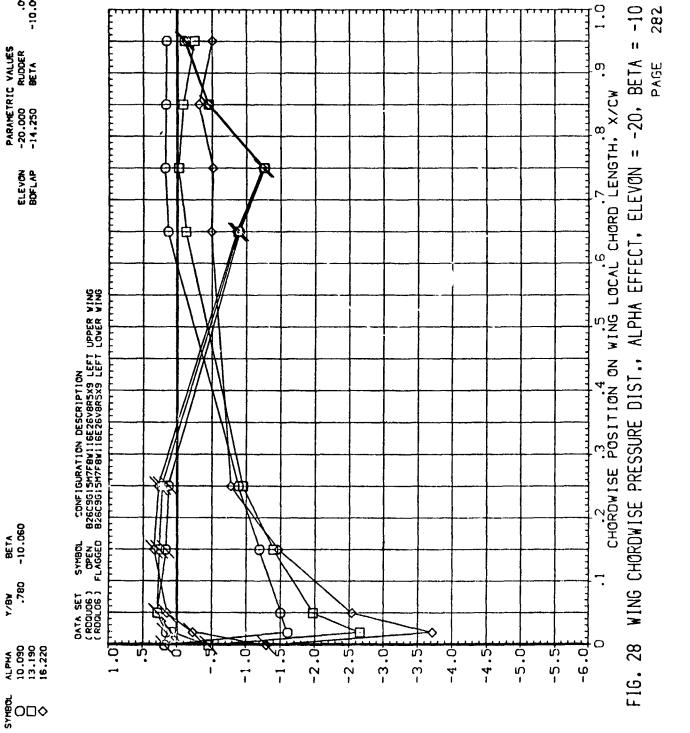


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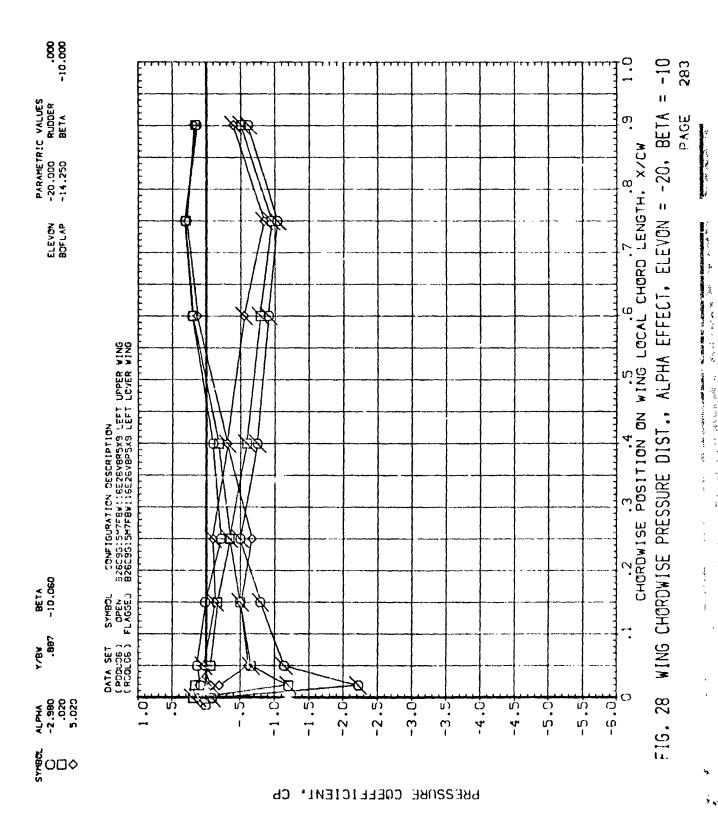


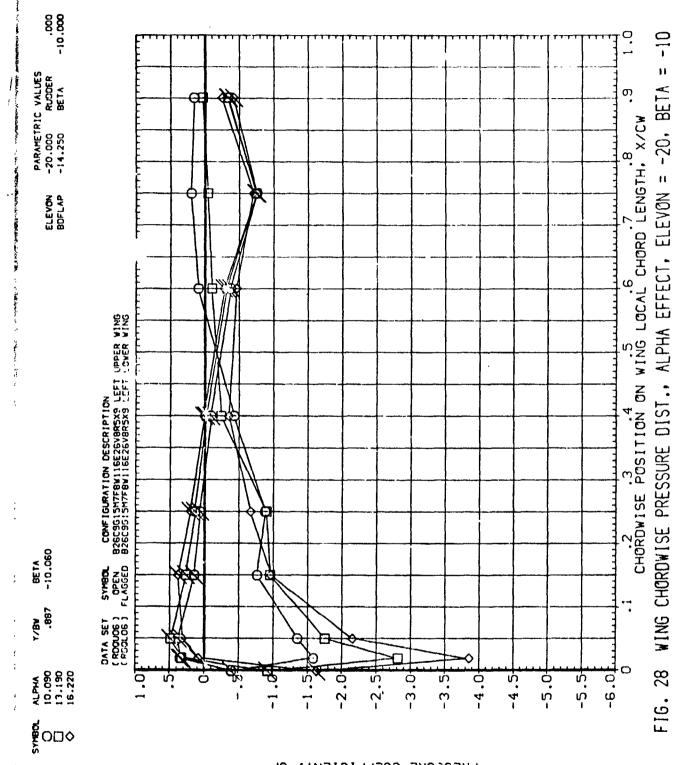
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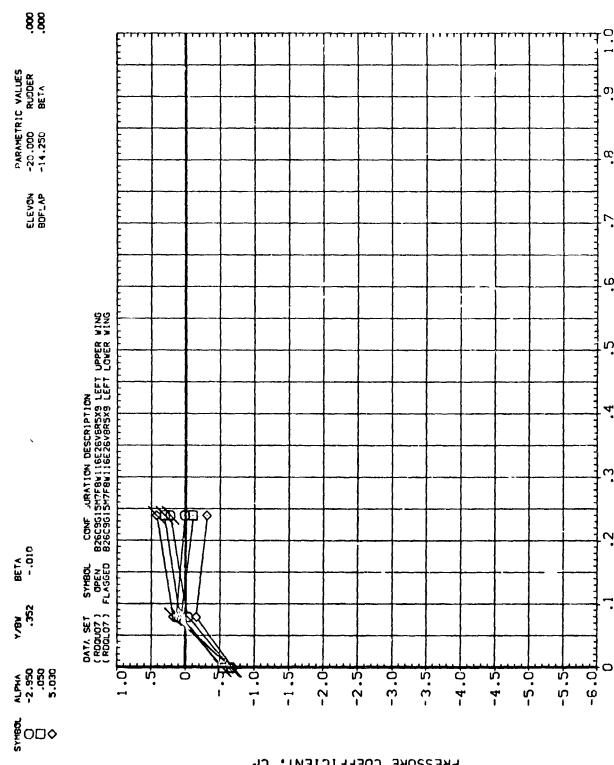
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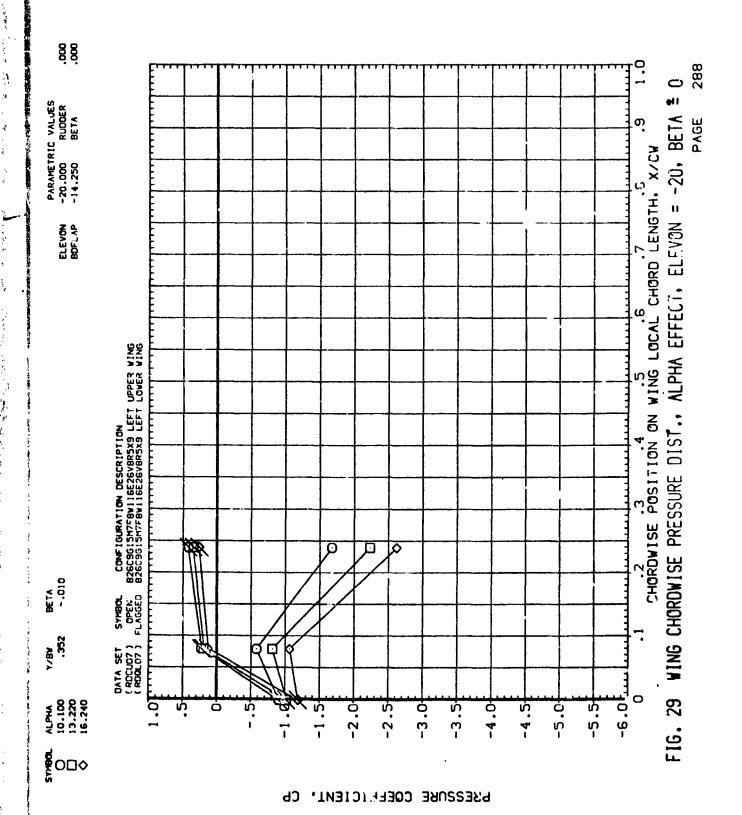
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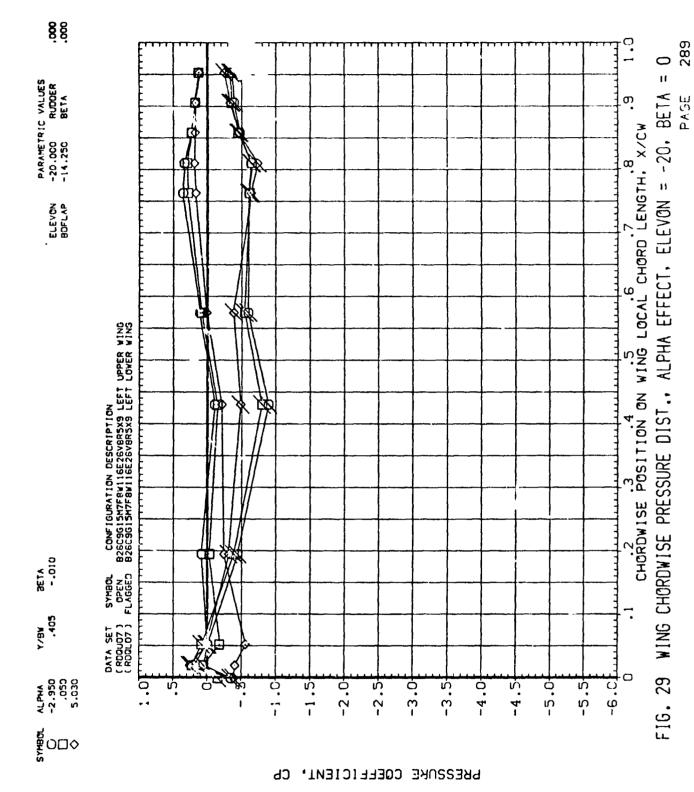
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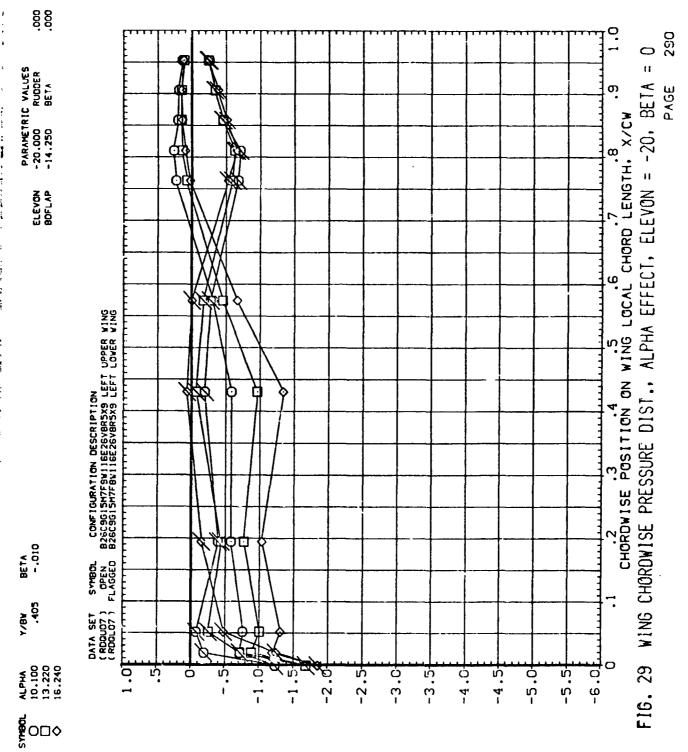
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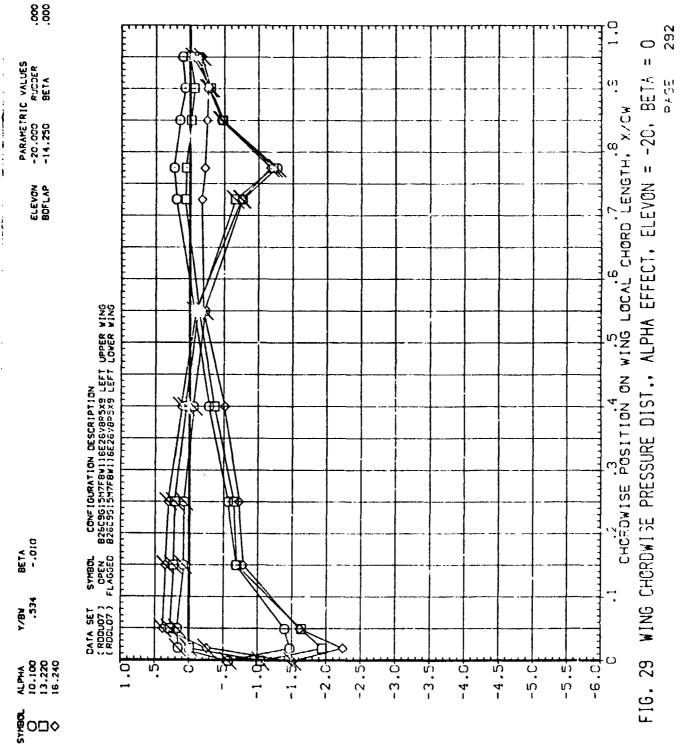


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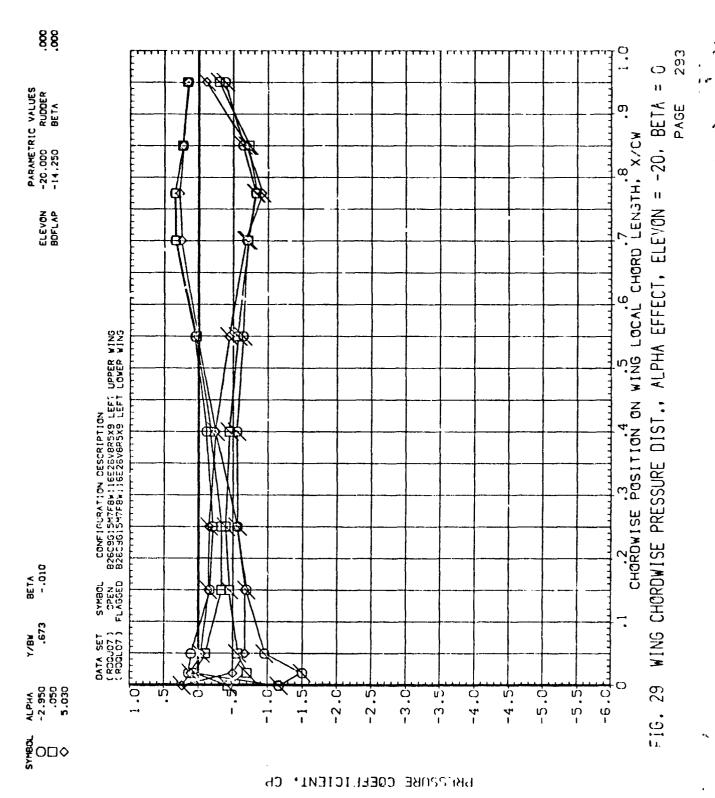
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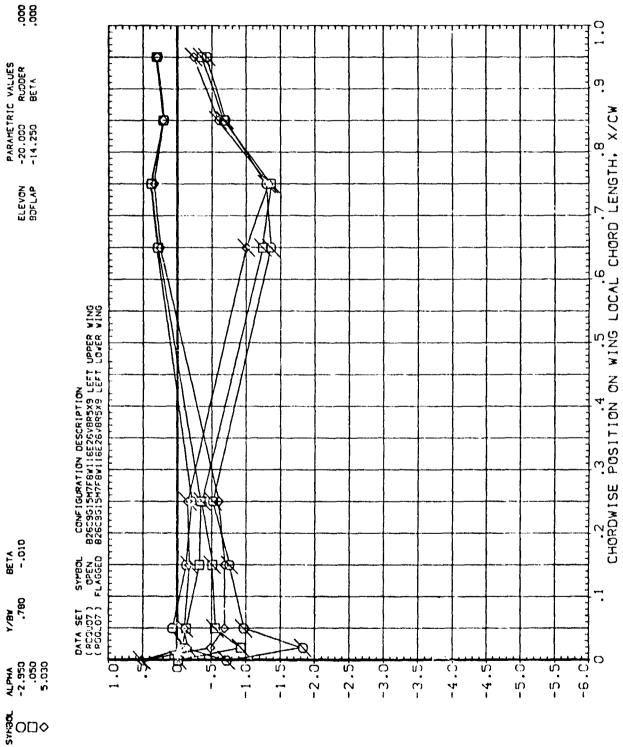


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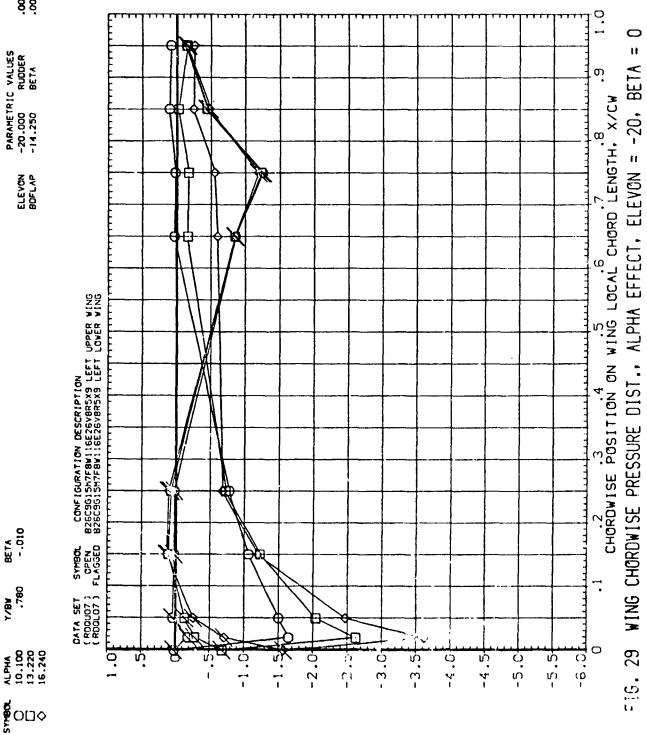
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FIG. 29 WING CHORDWISE PRESSURE DIST., ALPHA EFFECT, ELEVON = -20, BETA = PAGE



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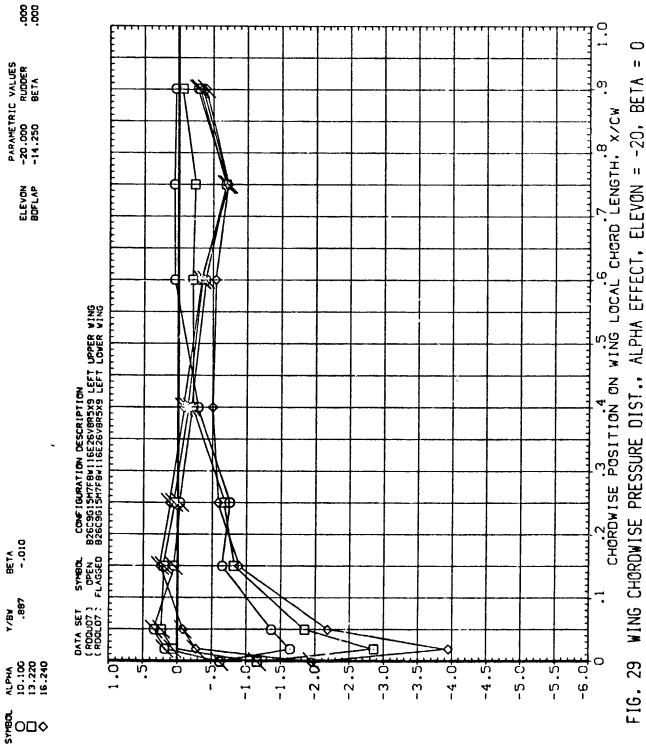
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297 0 FIG. 29 WING CHORDWISE FRESSURE DIST., ALPHA EFFECT, ELEVON = -20, BETA = PAGE CHORDWISE POSITION ON WING LOCAL CHORD LENGTH, X/CW

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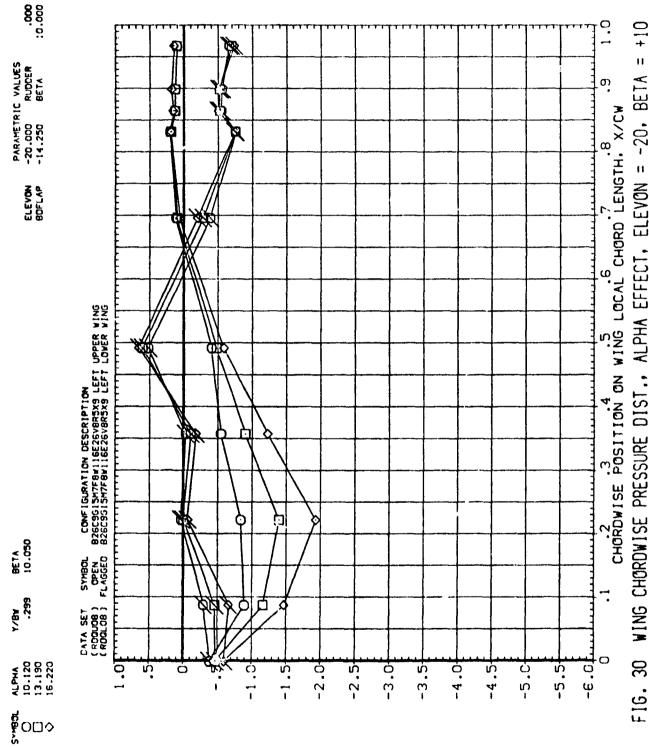
FIG. 29 WING CHORDWISE PRESSURE DIST., ALPHA EFFECT, ELEVON = -20, BETA = PAGE

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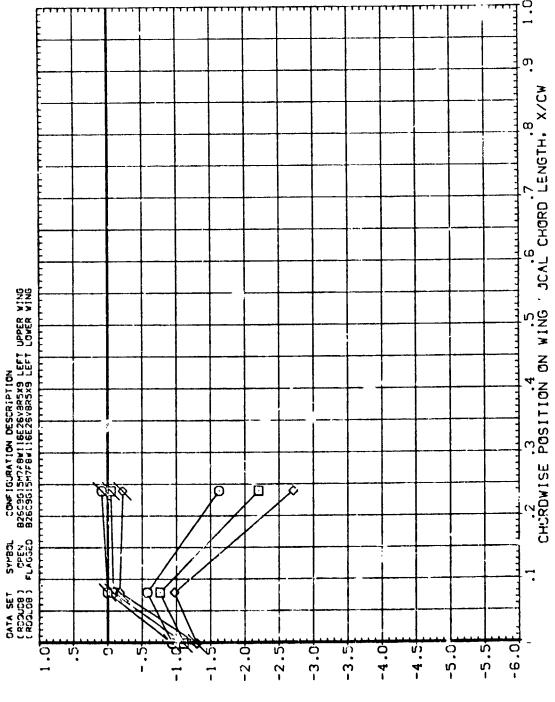
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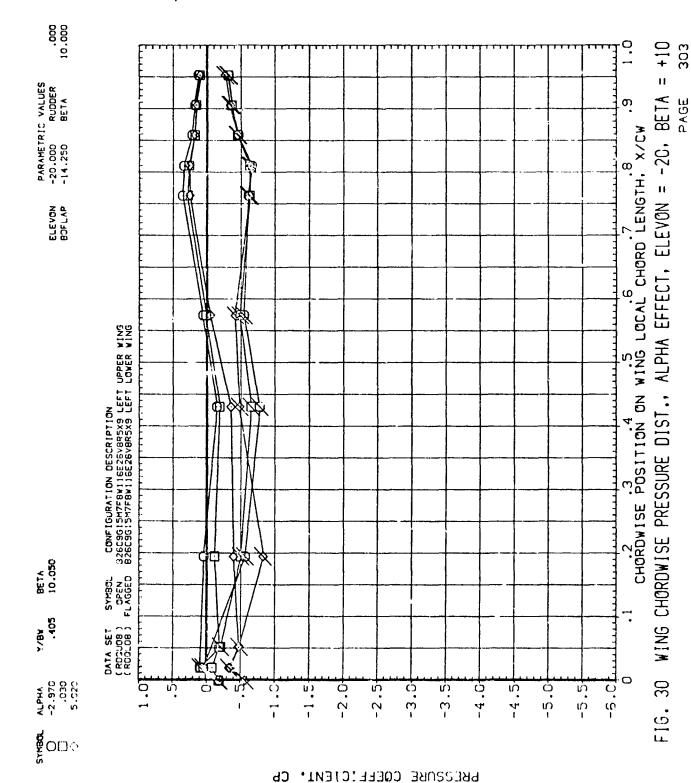
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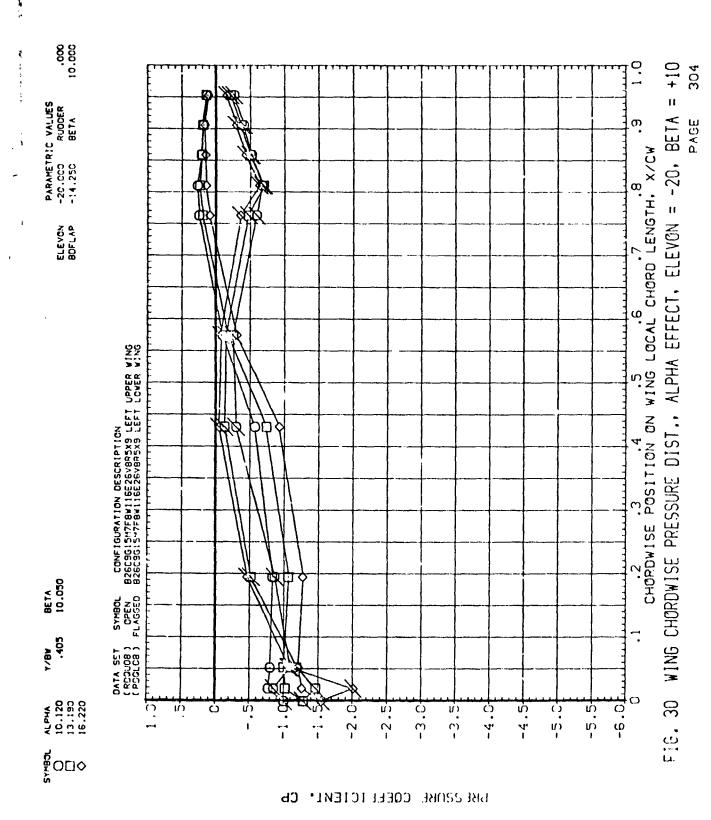
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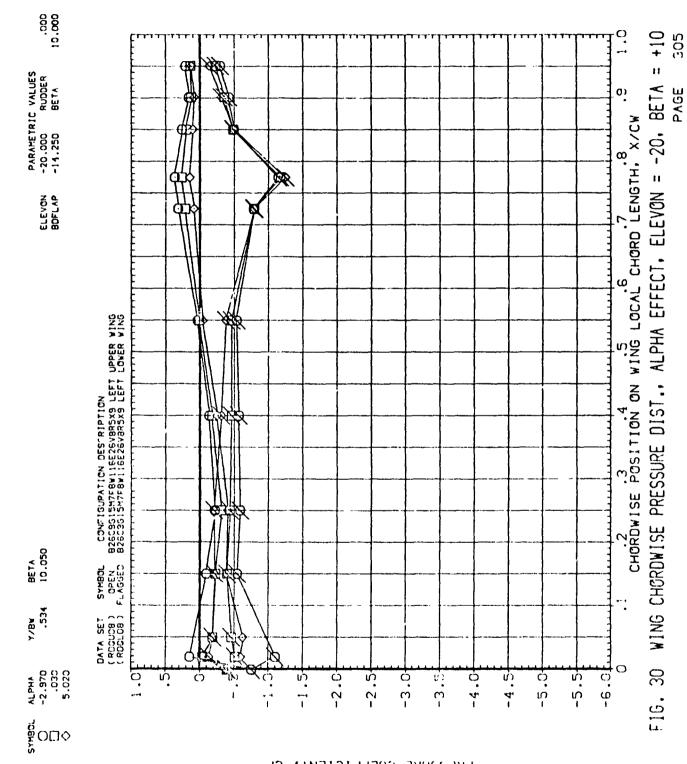
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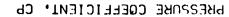


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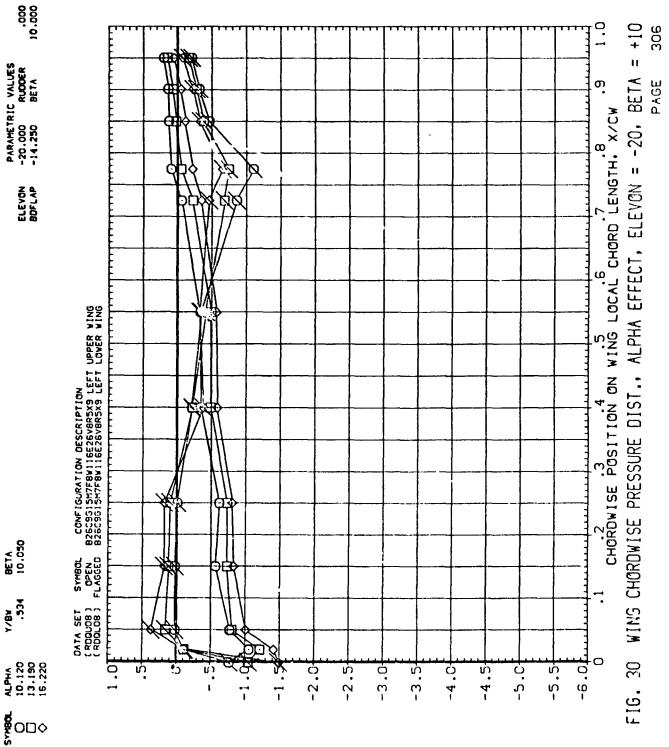


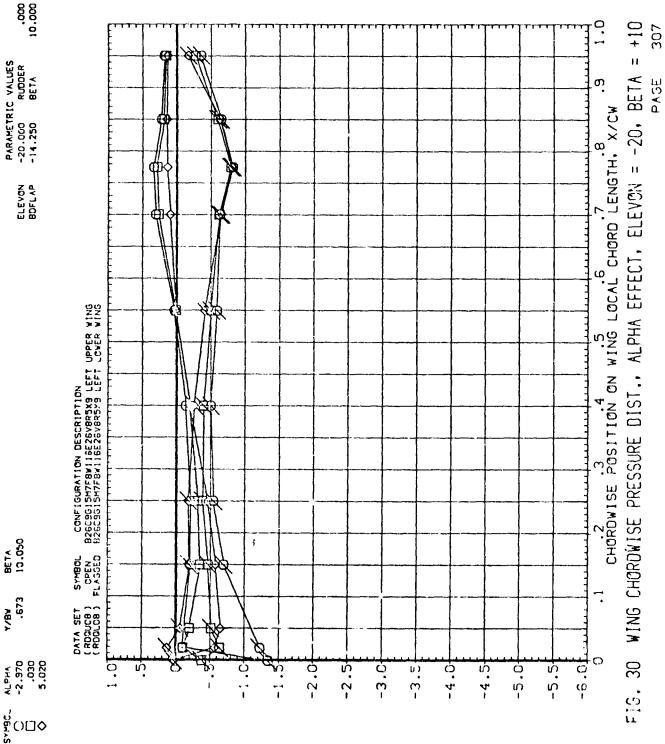
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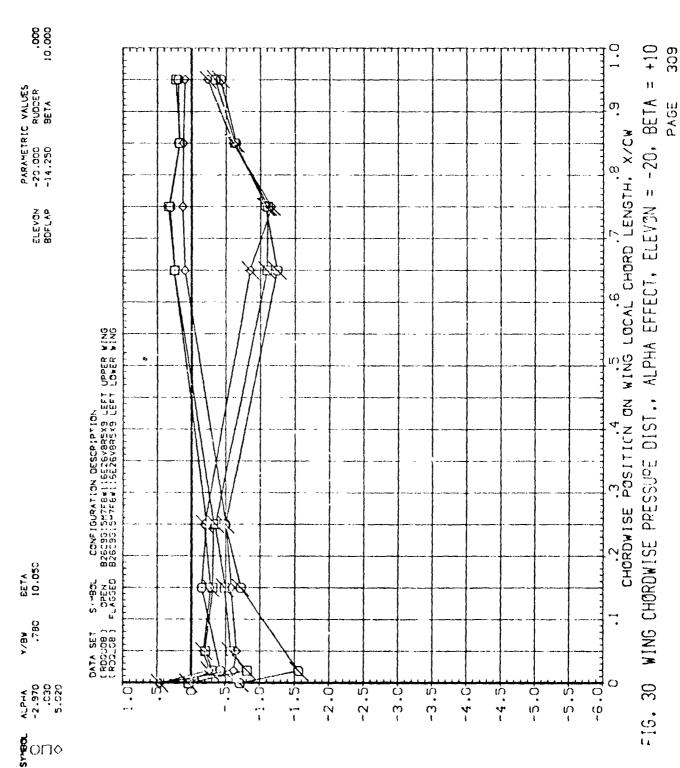
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WING CHORDWISE PRESSURE DIST., ALPHA EFFECT, ELEVON = -20. BETA

FIG. 30



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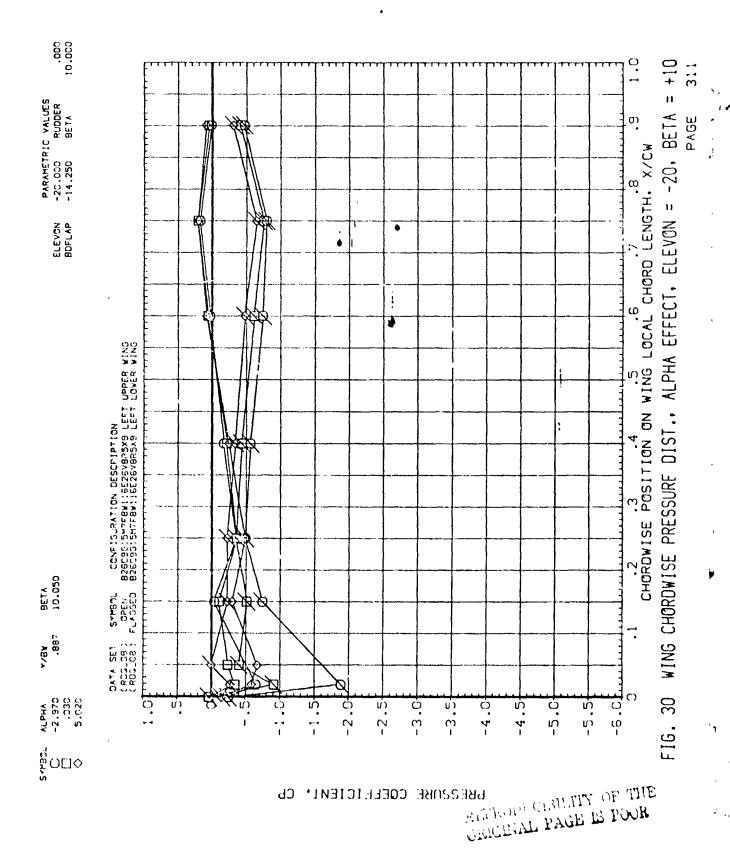
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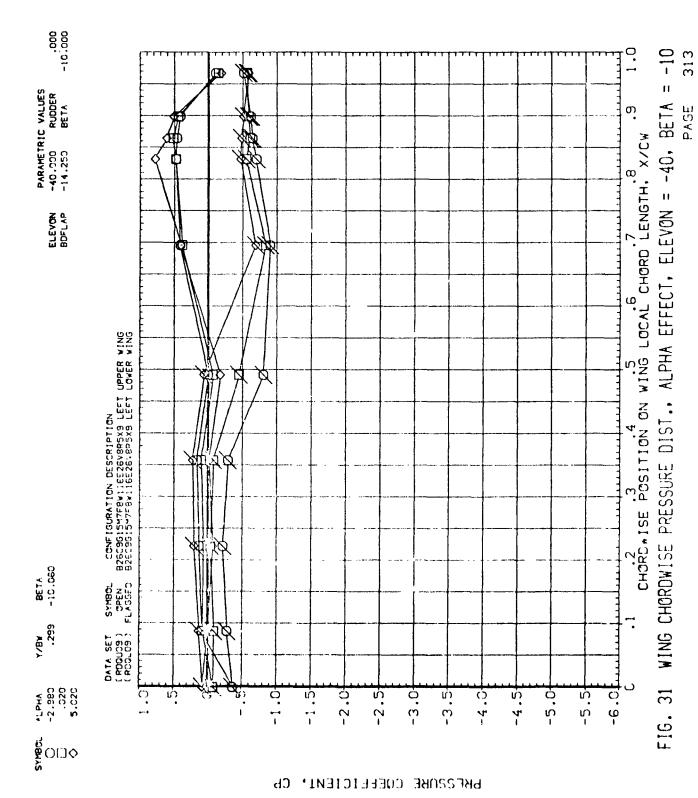
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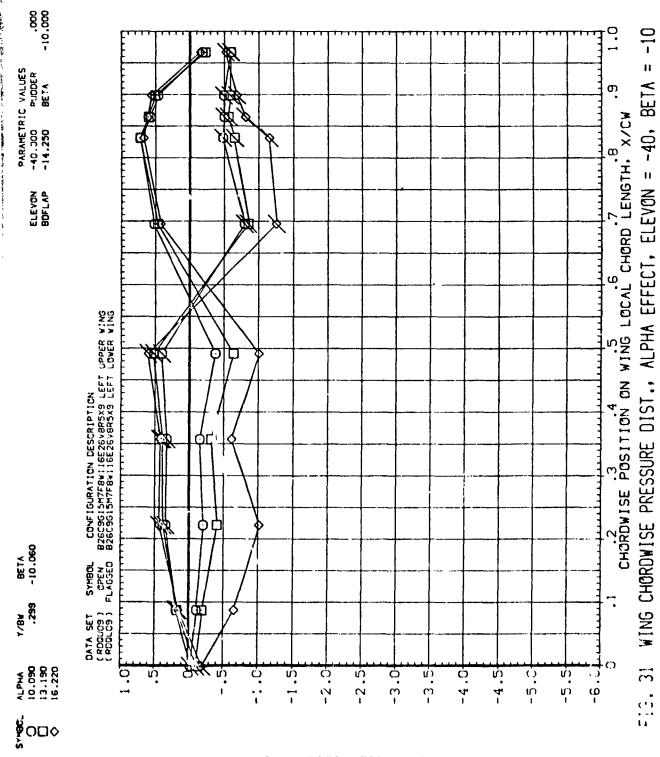
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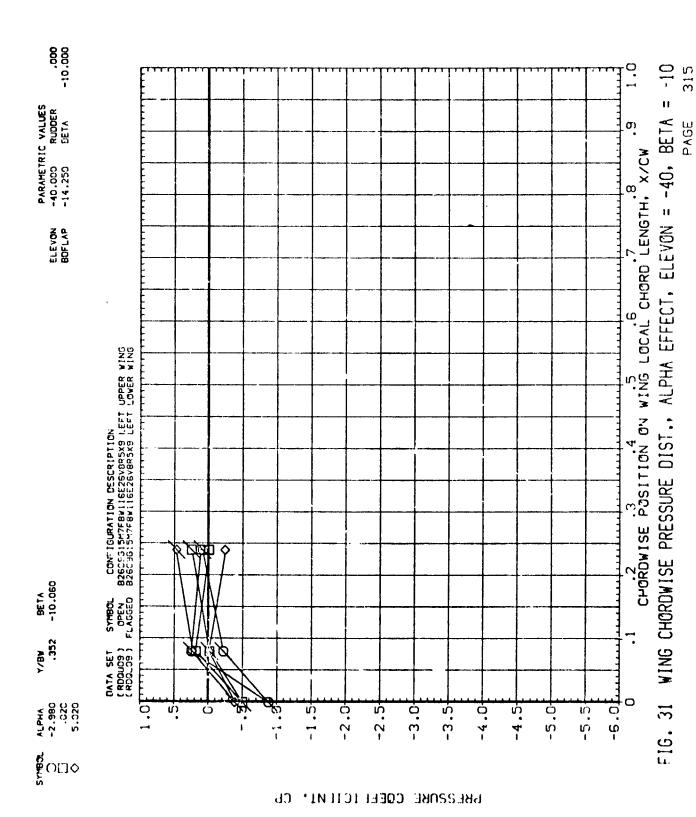


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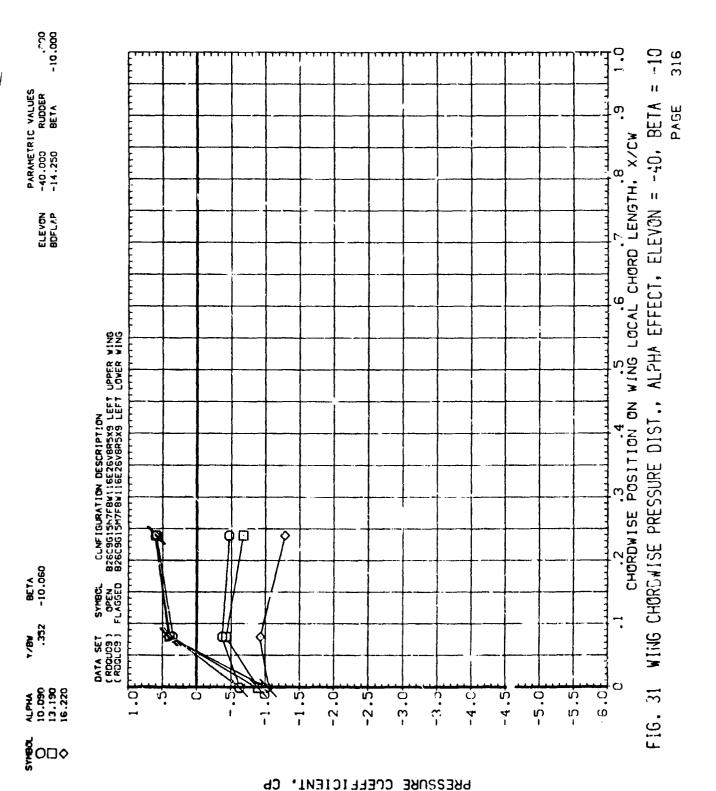


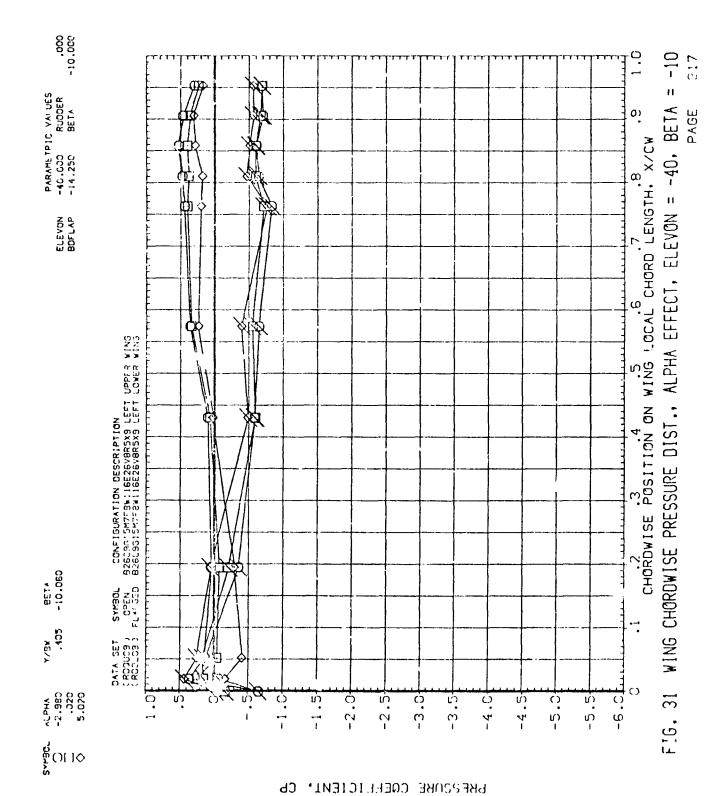
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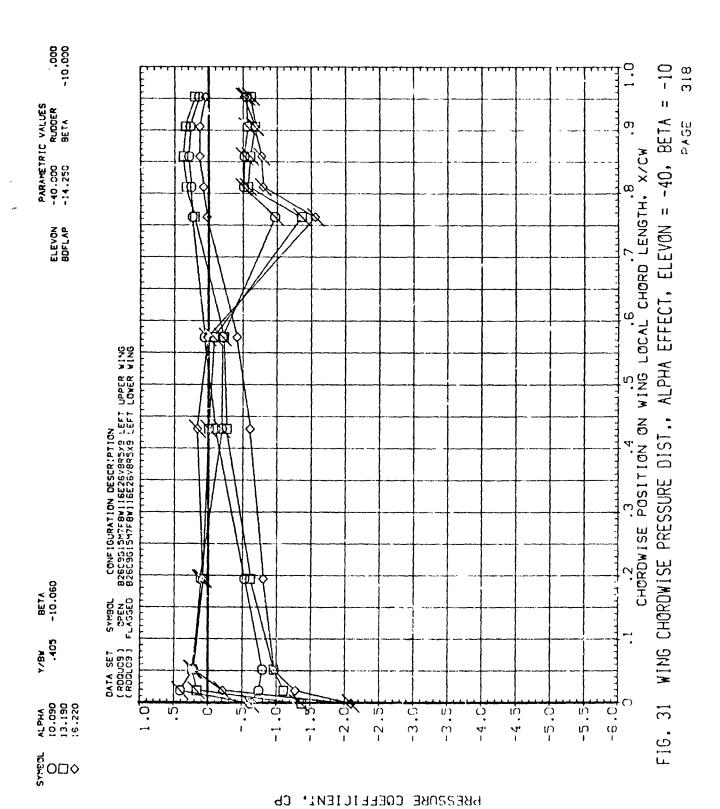




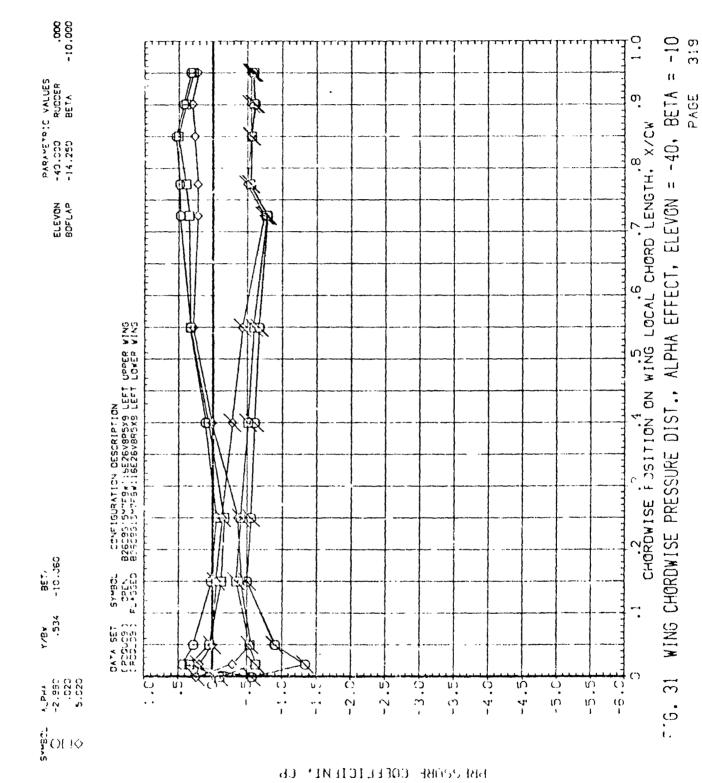
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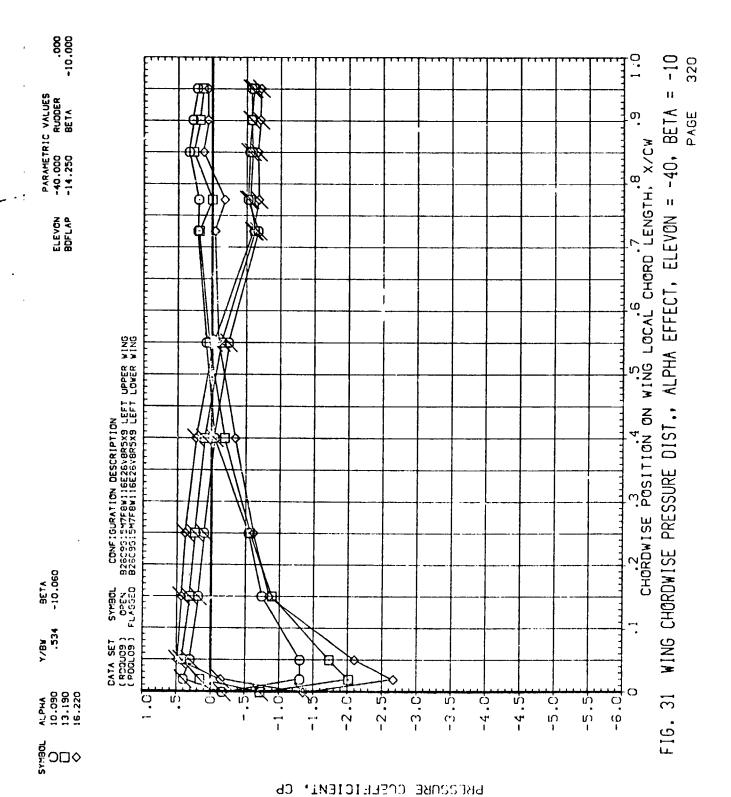
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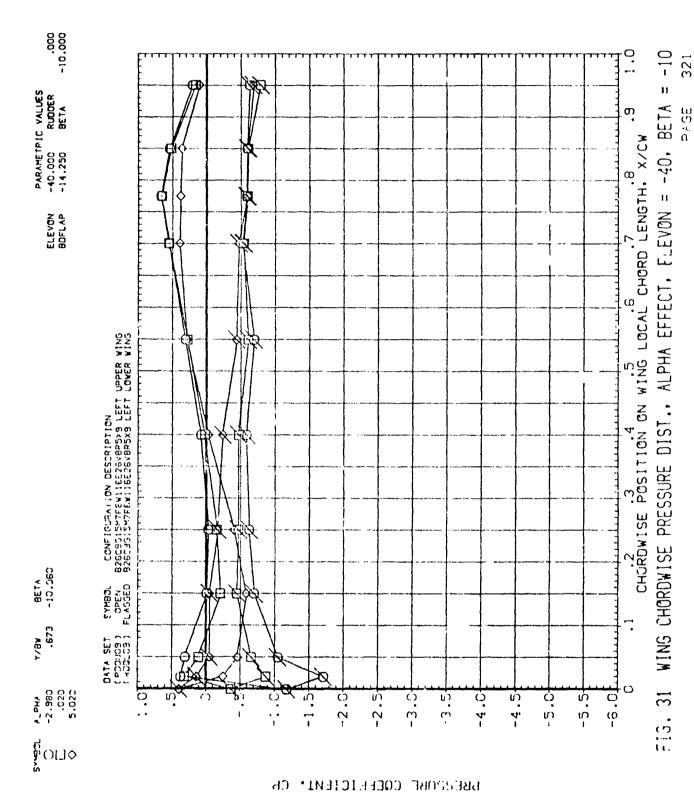


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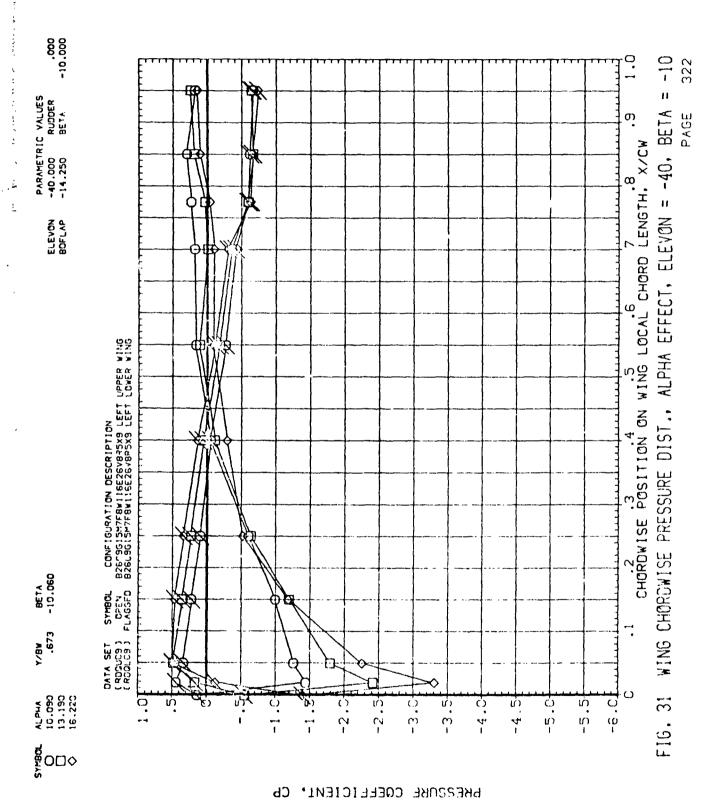


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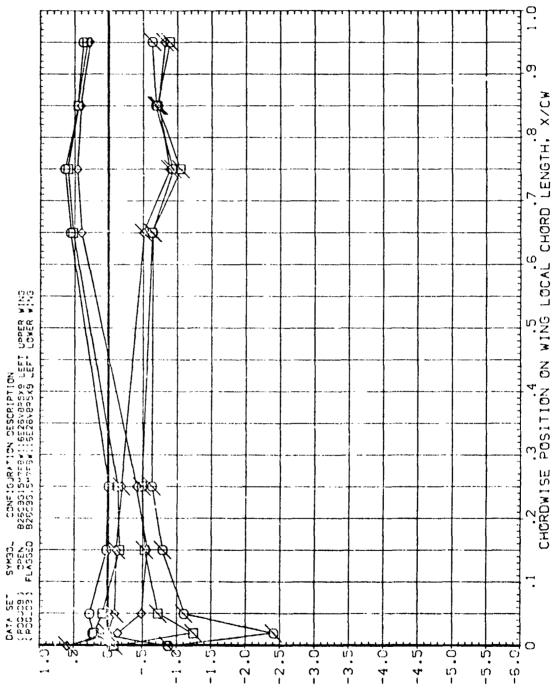
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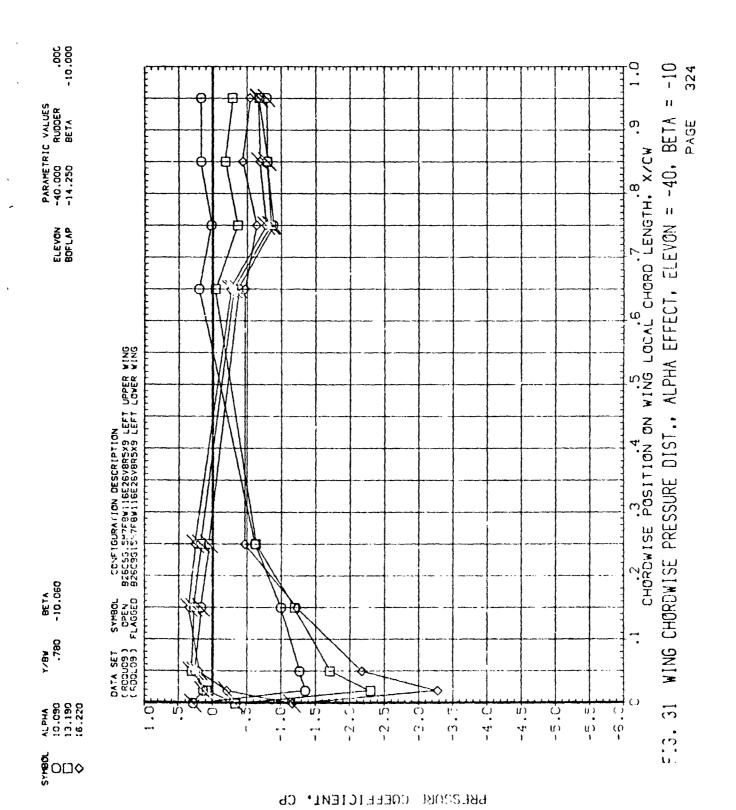


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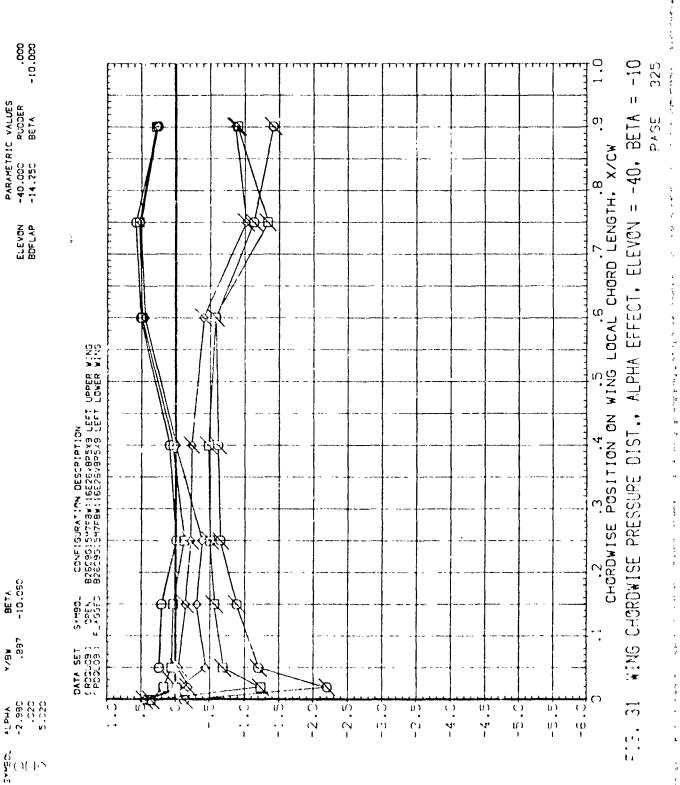


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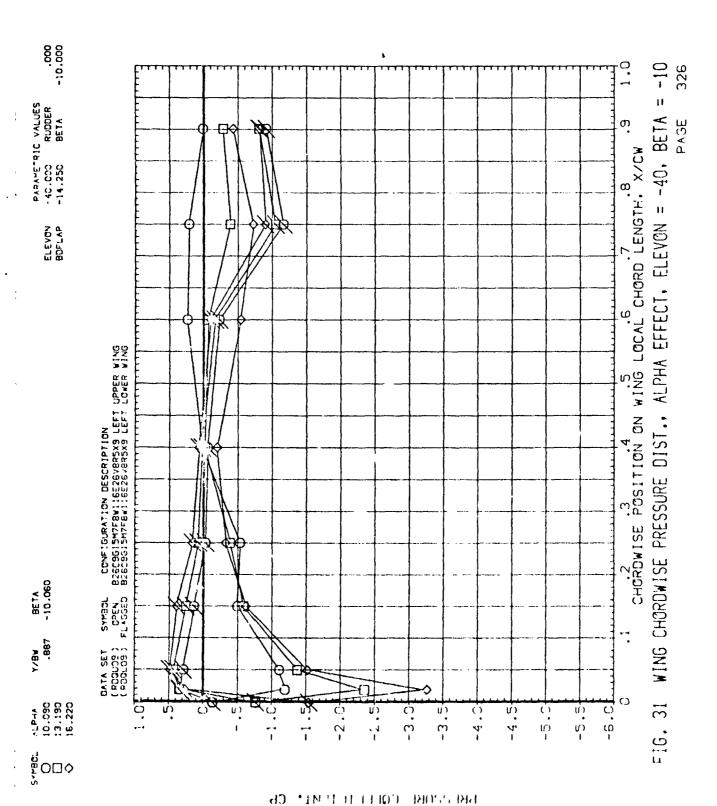
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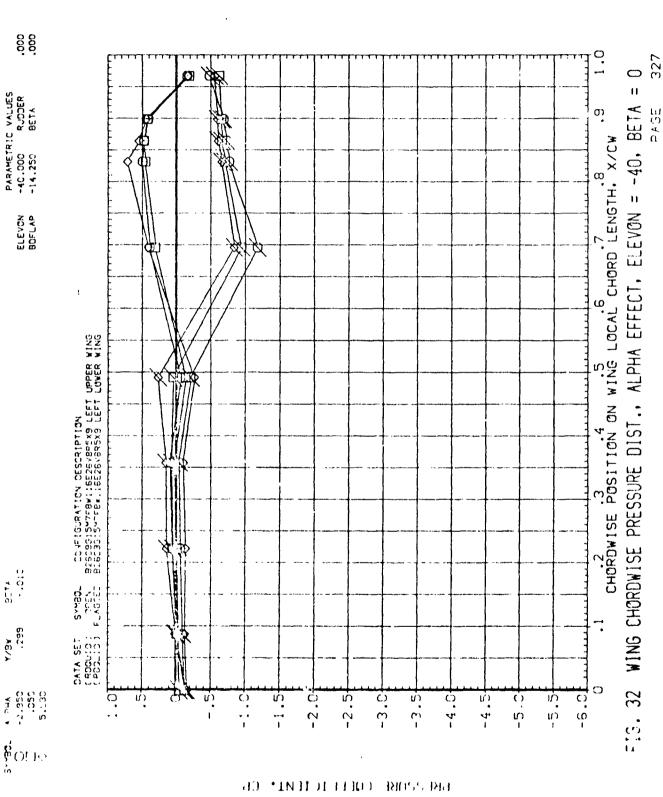


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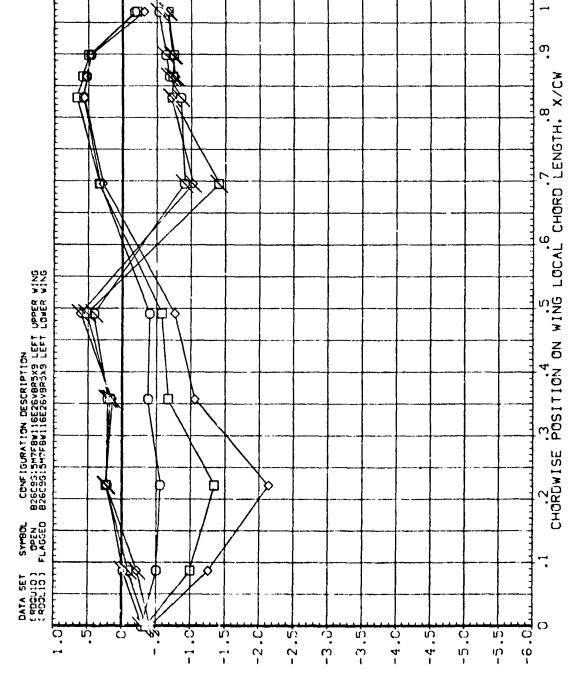
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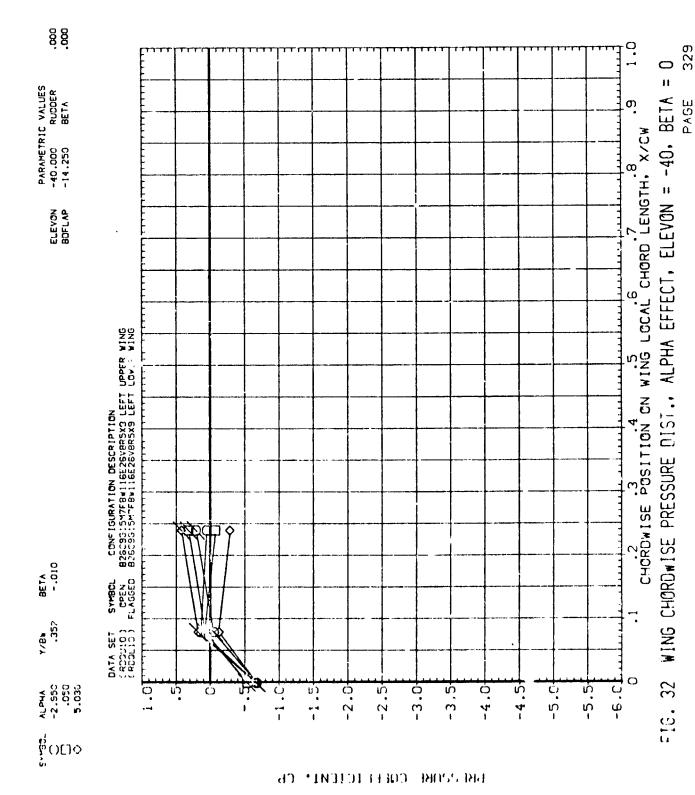
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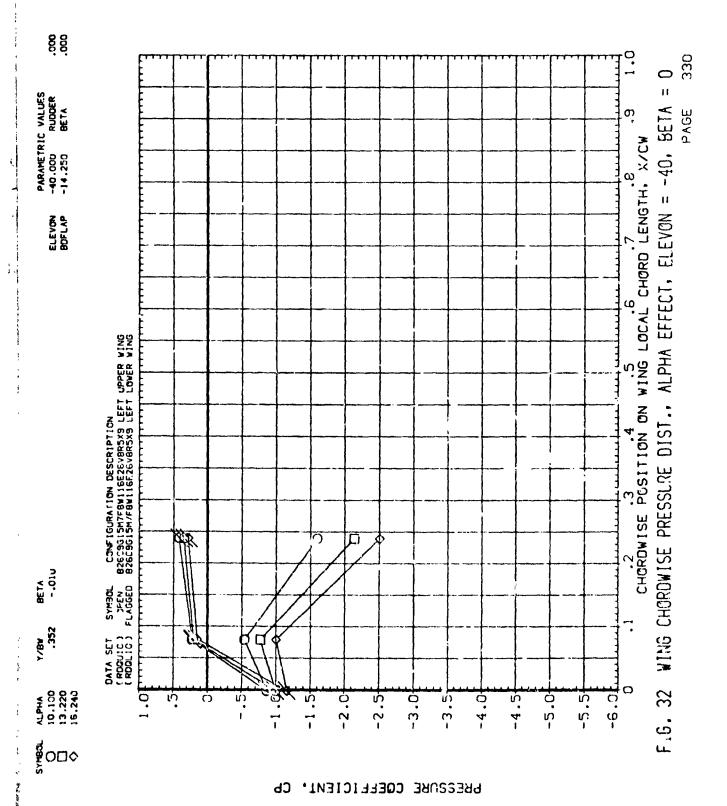
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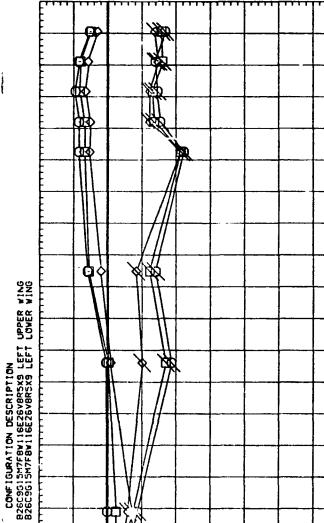
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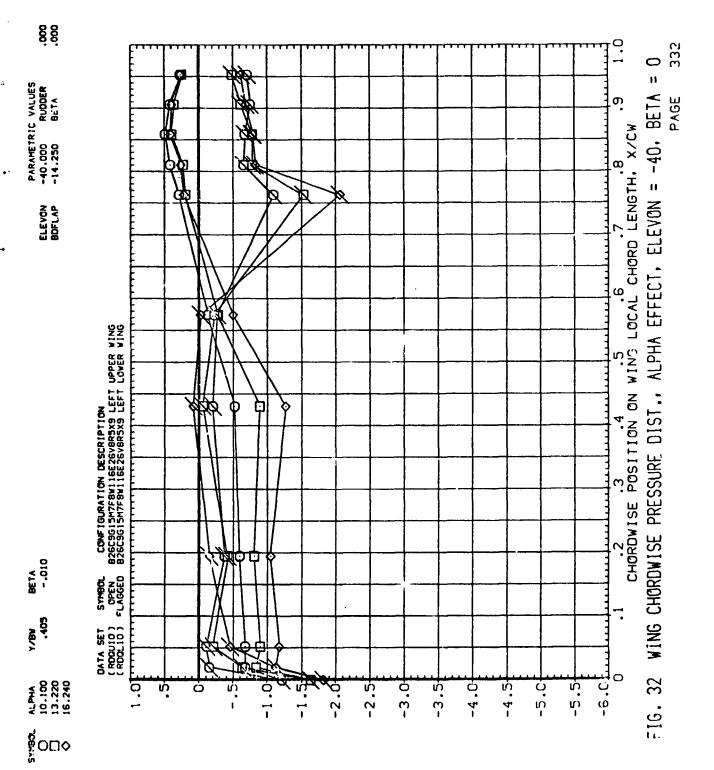
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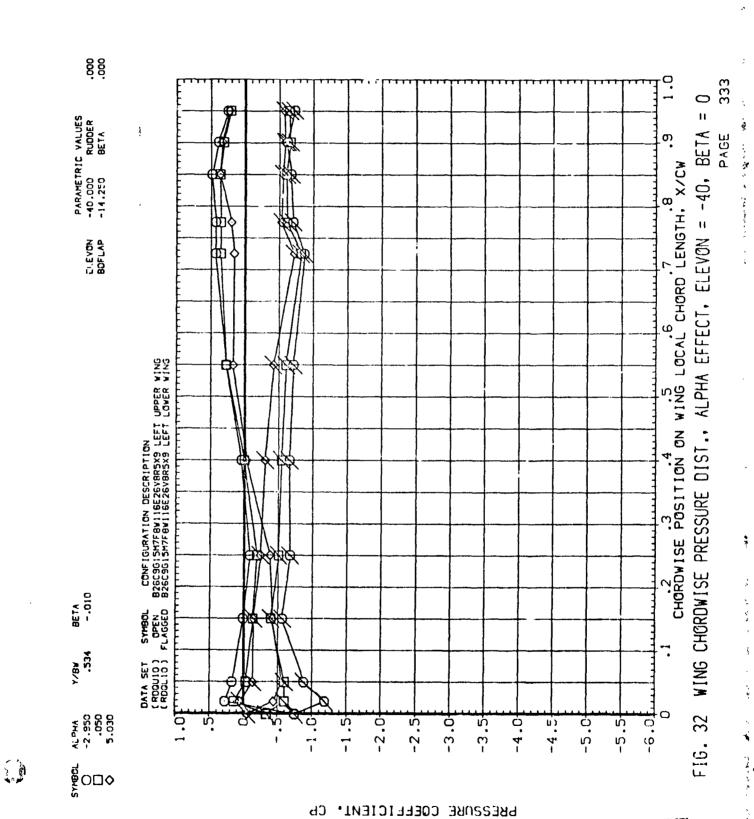


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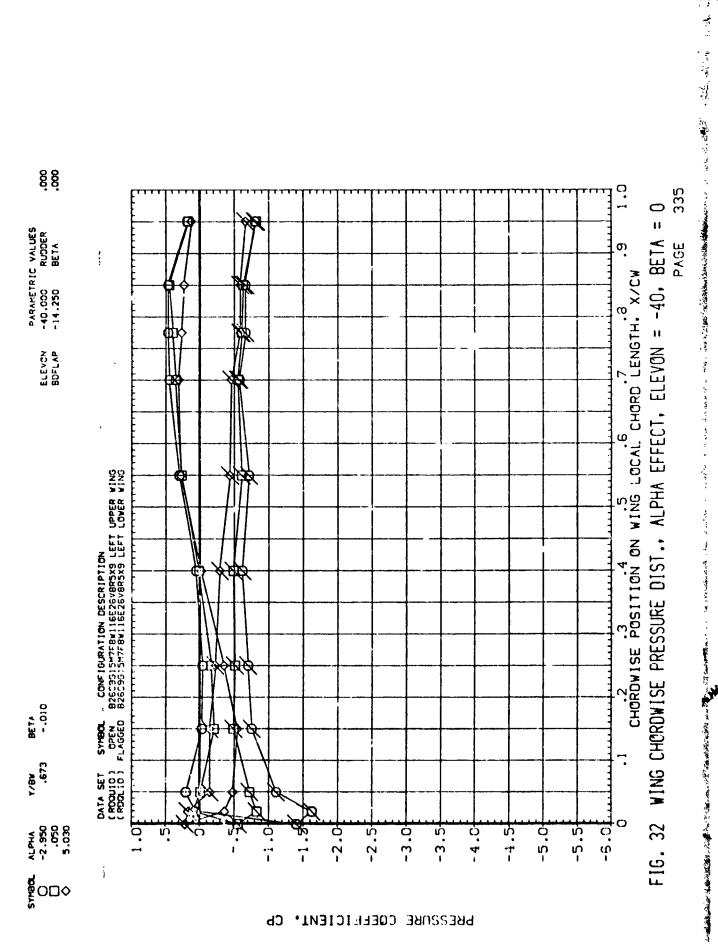
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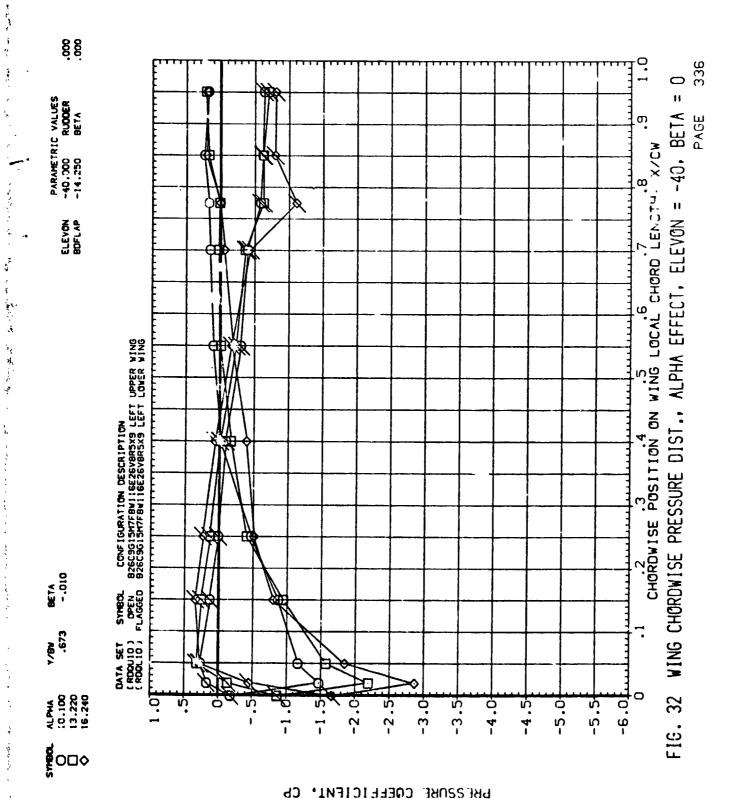
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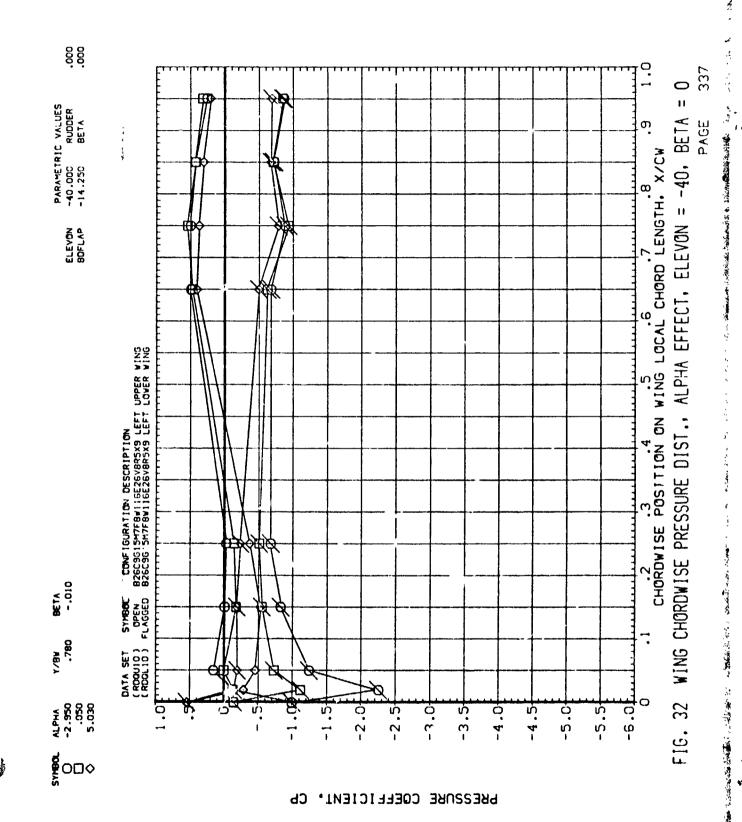
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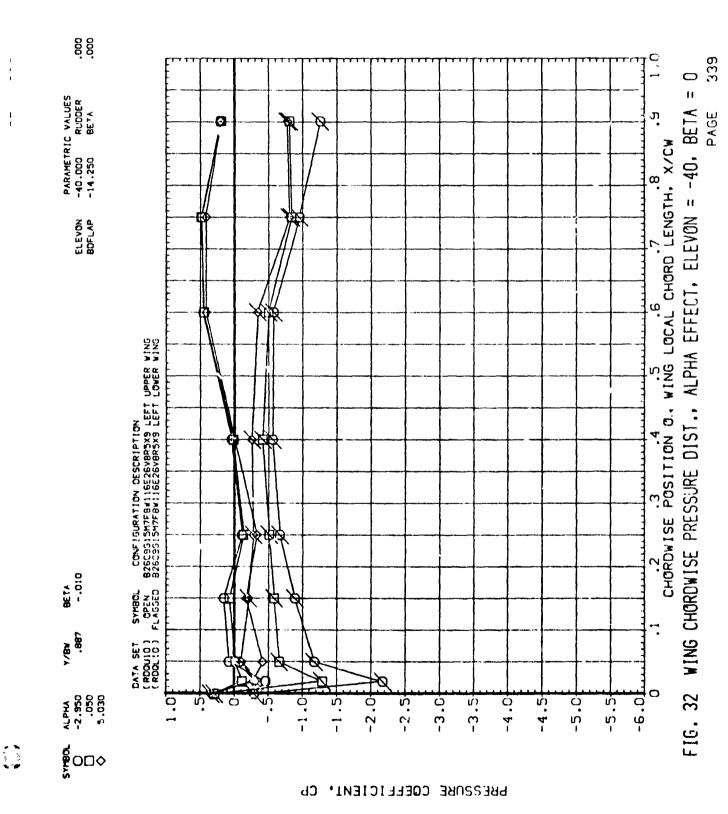
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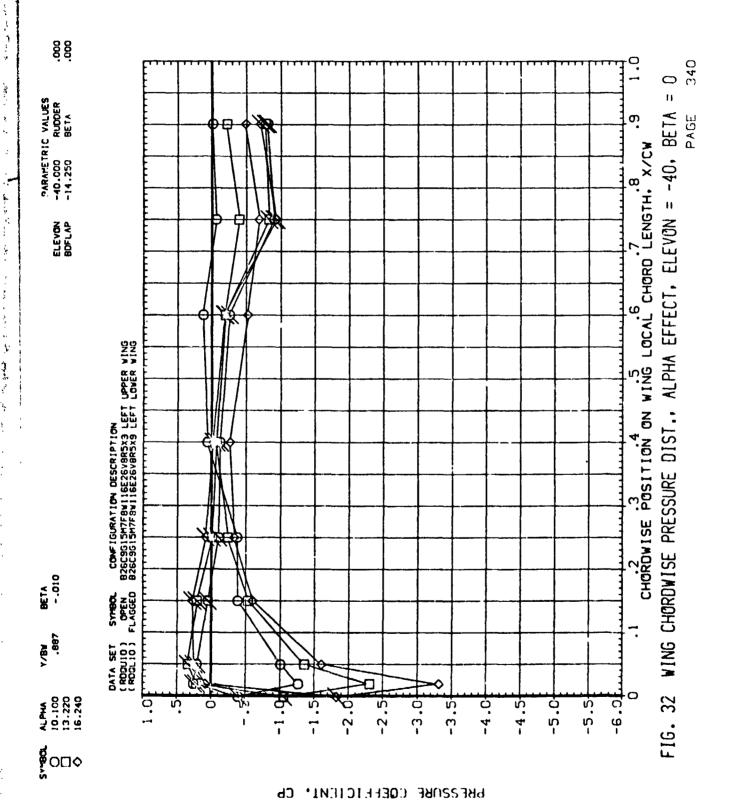
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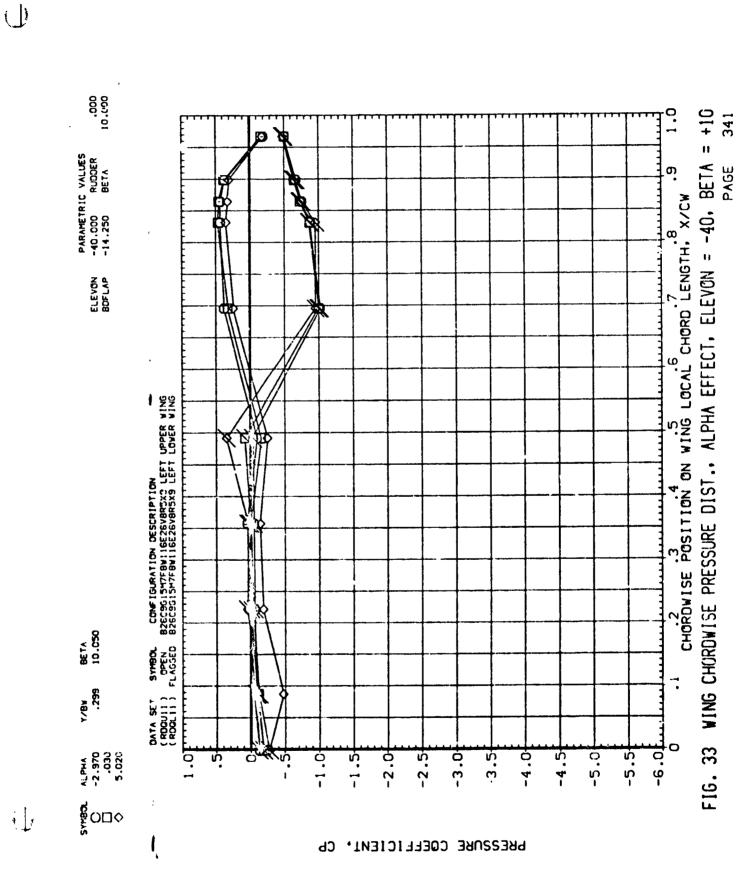
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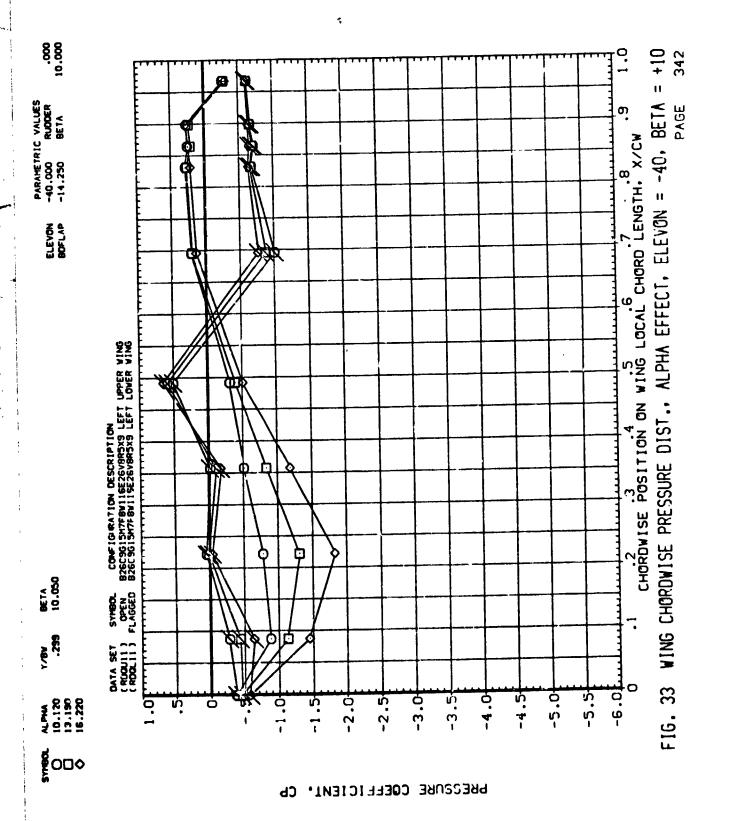
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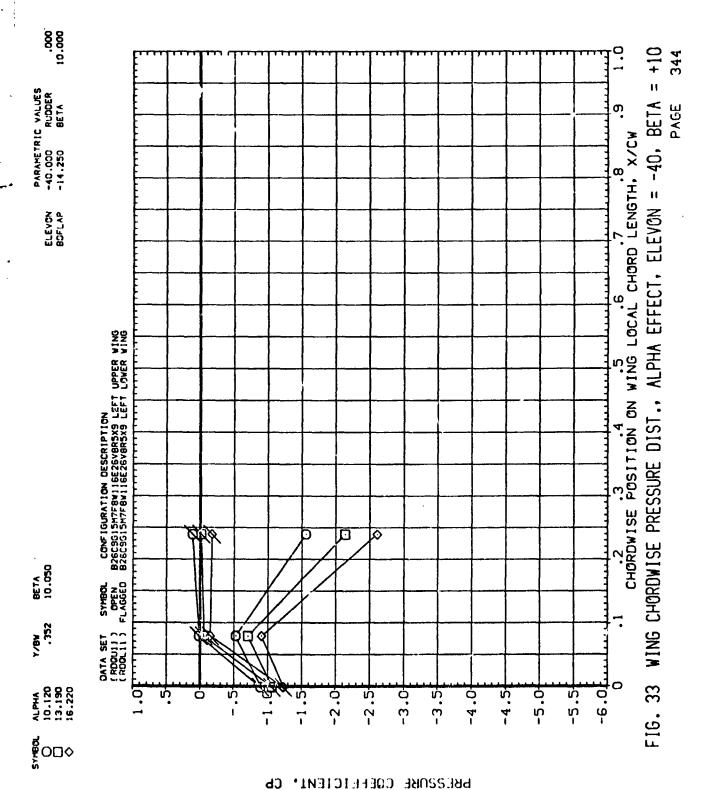
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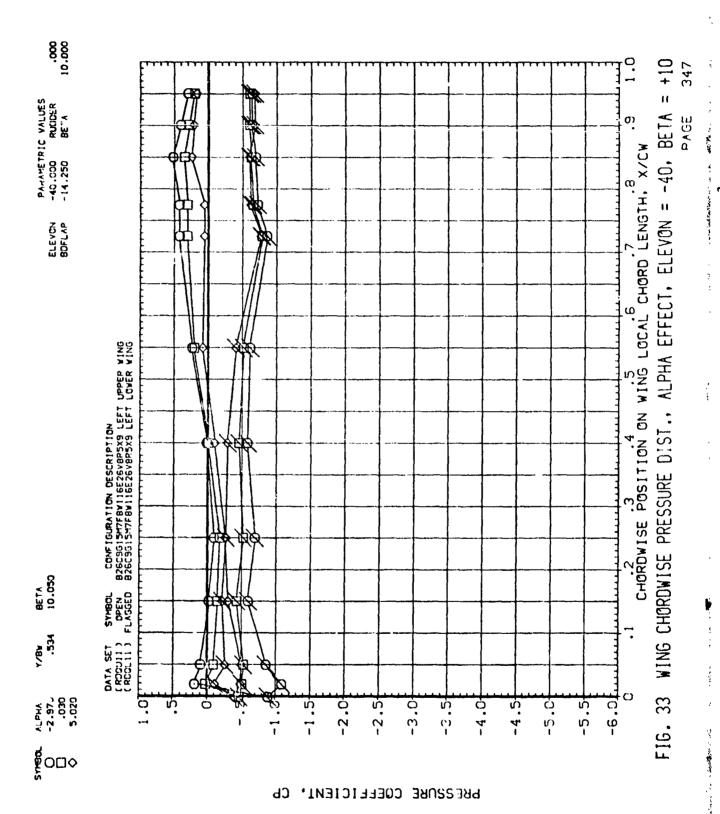
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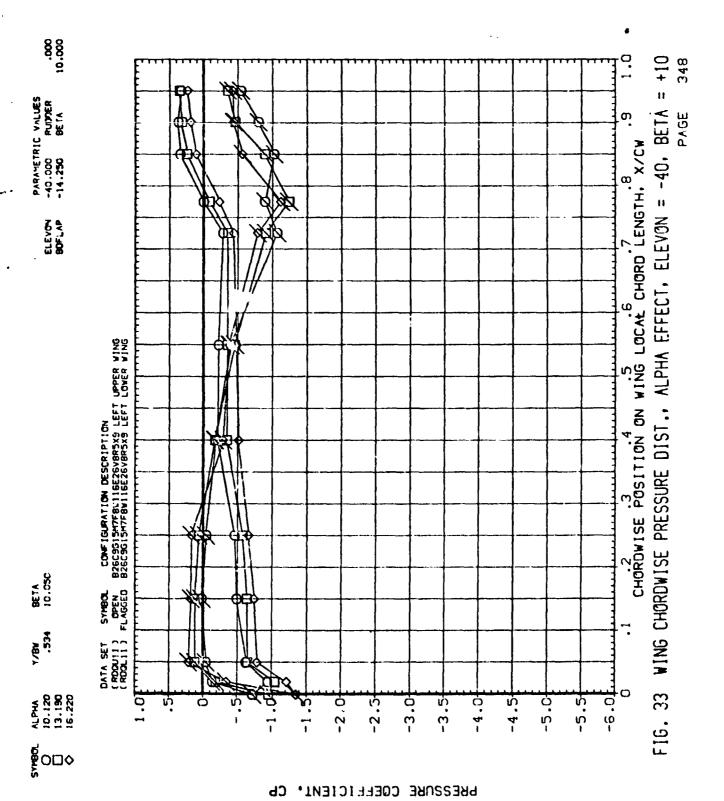
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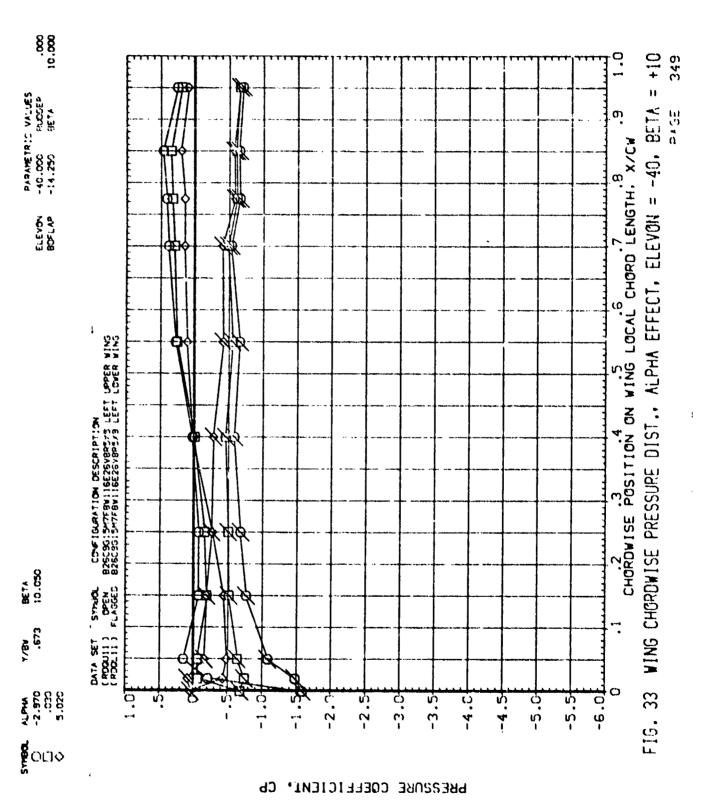


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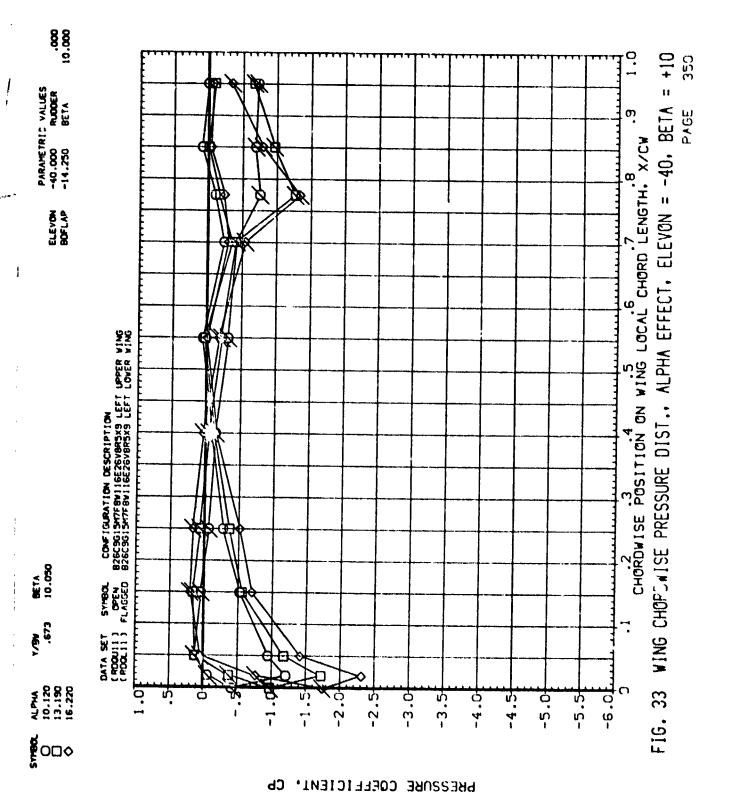
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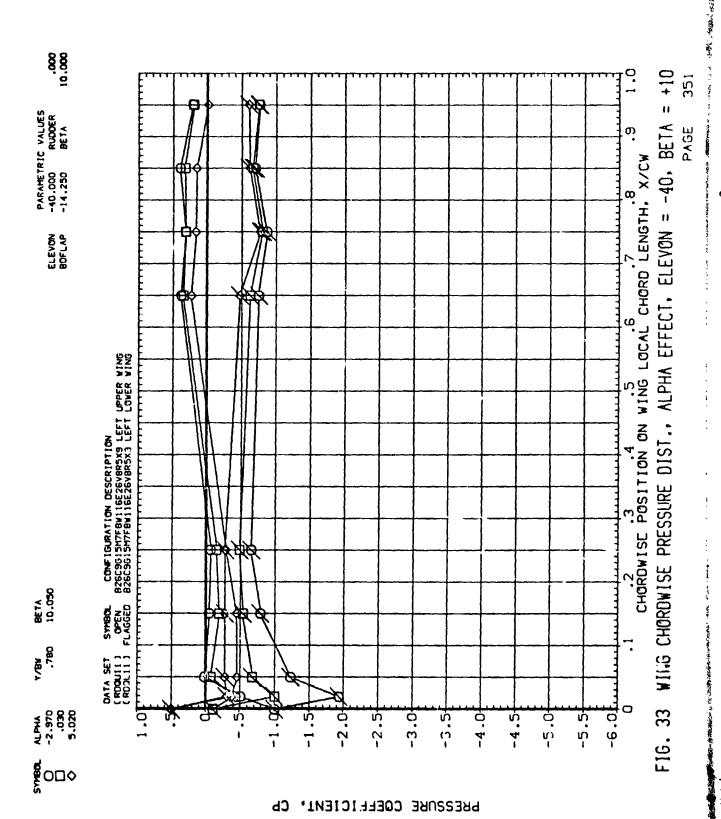




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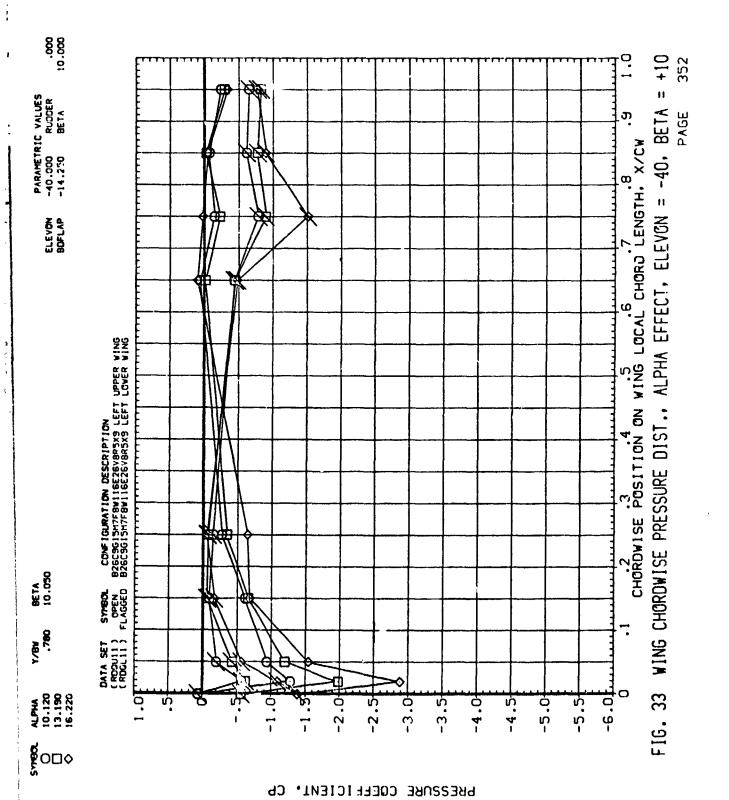
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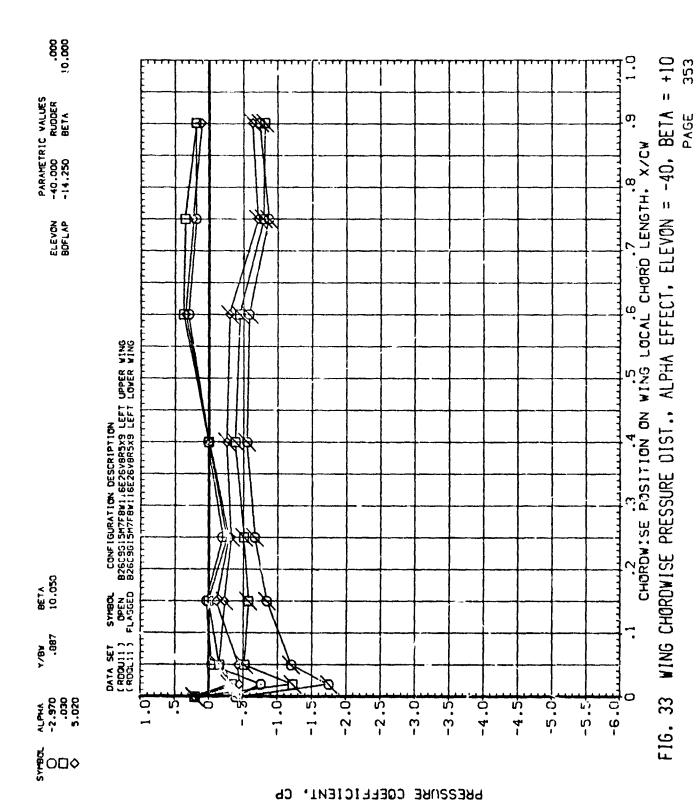


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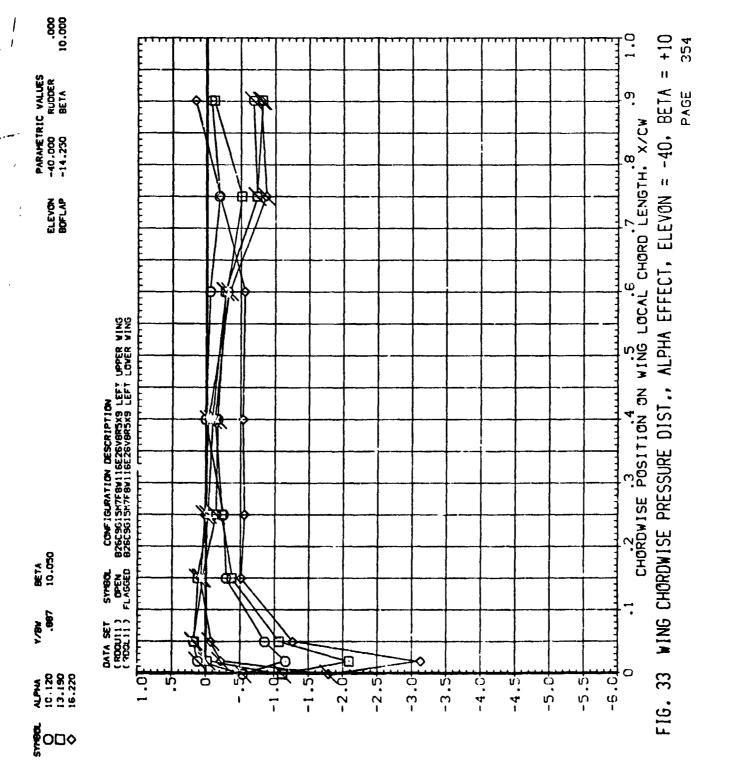


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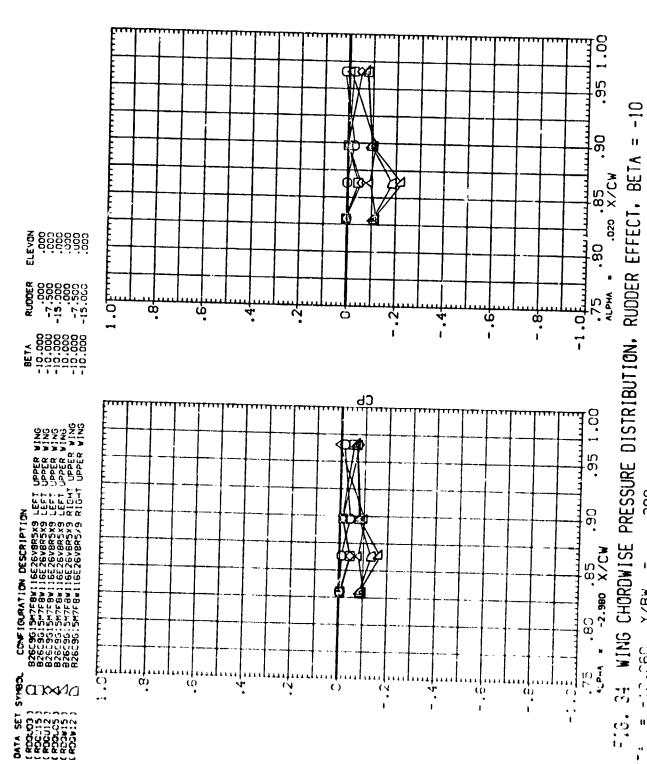
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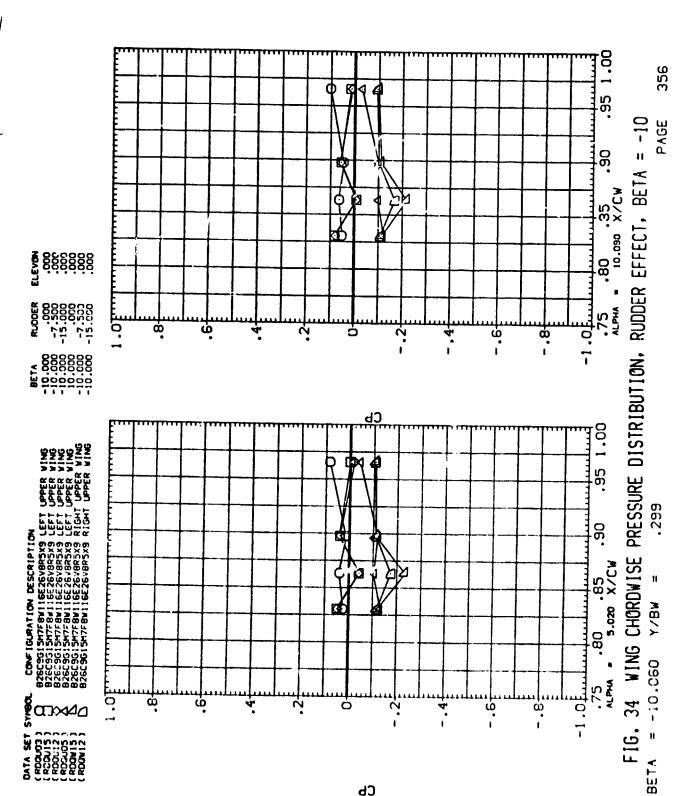
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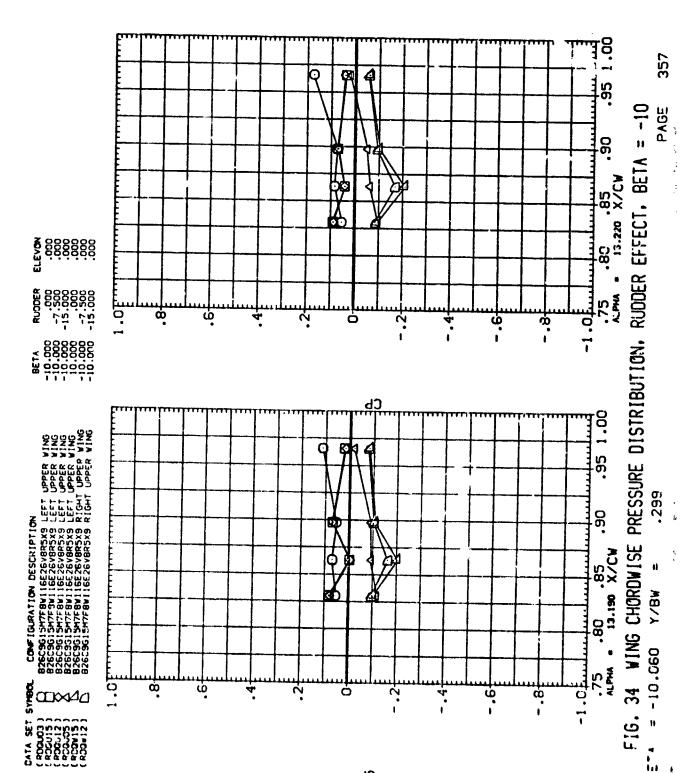
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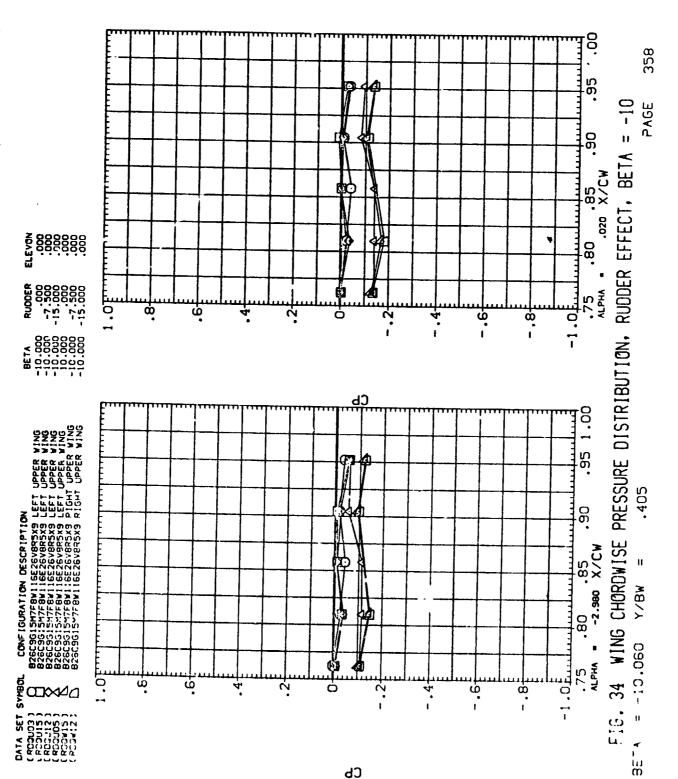
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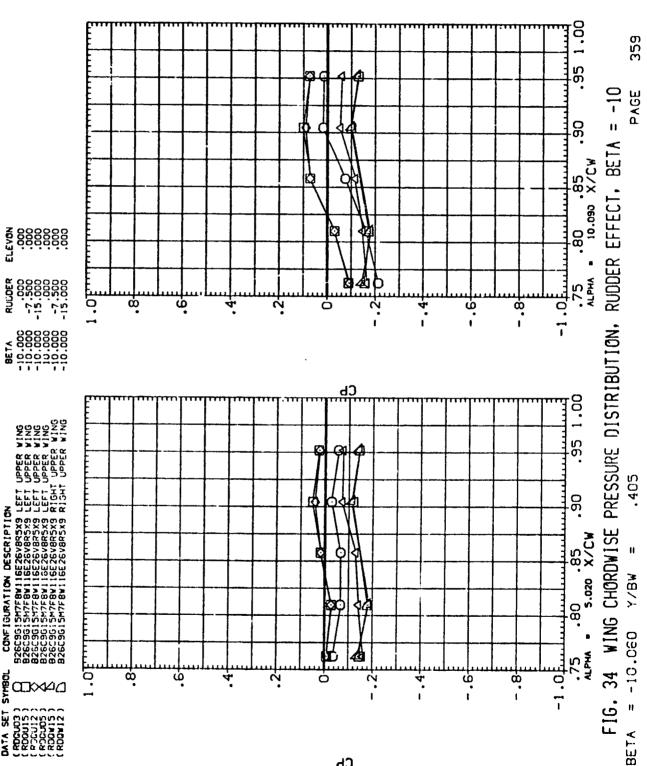
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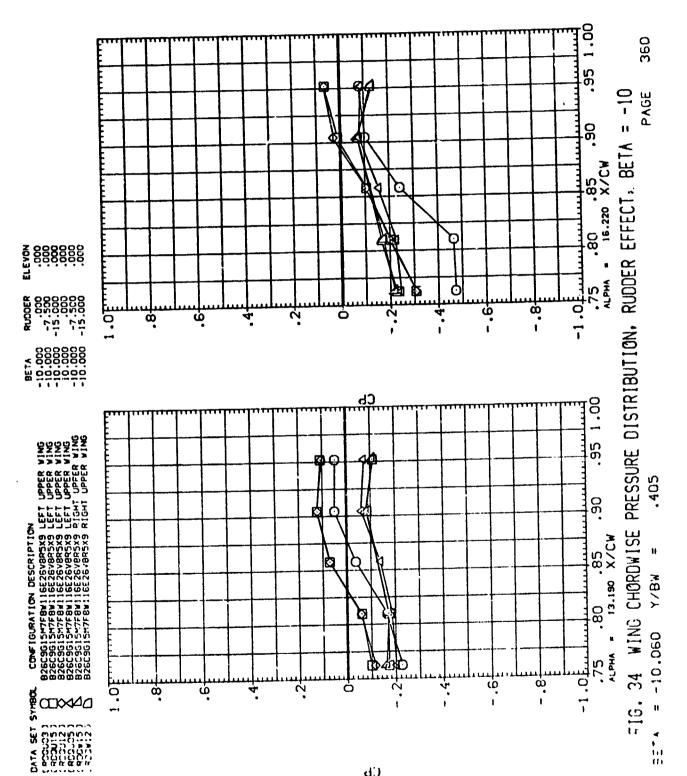




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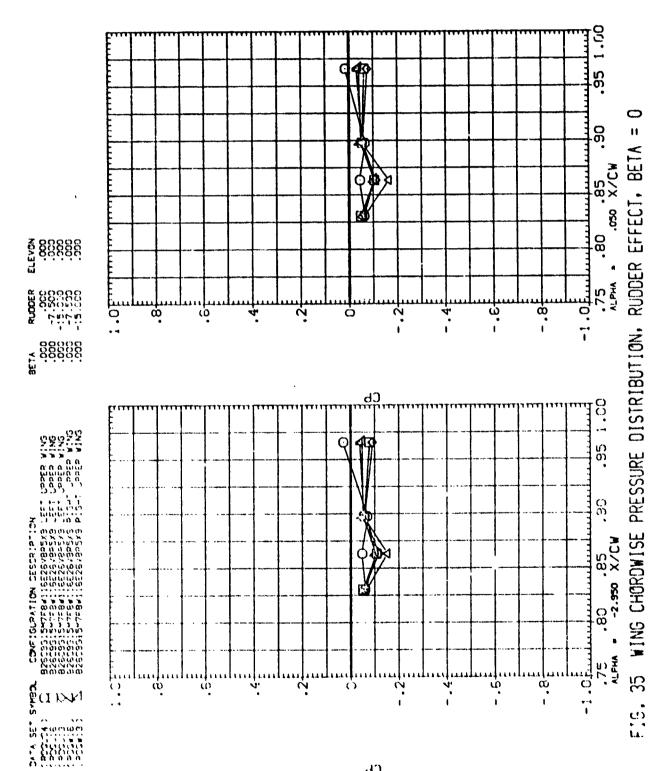
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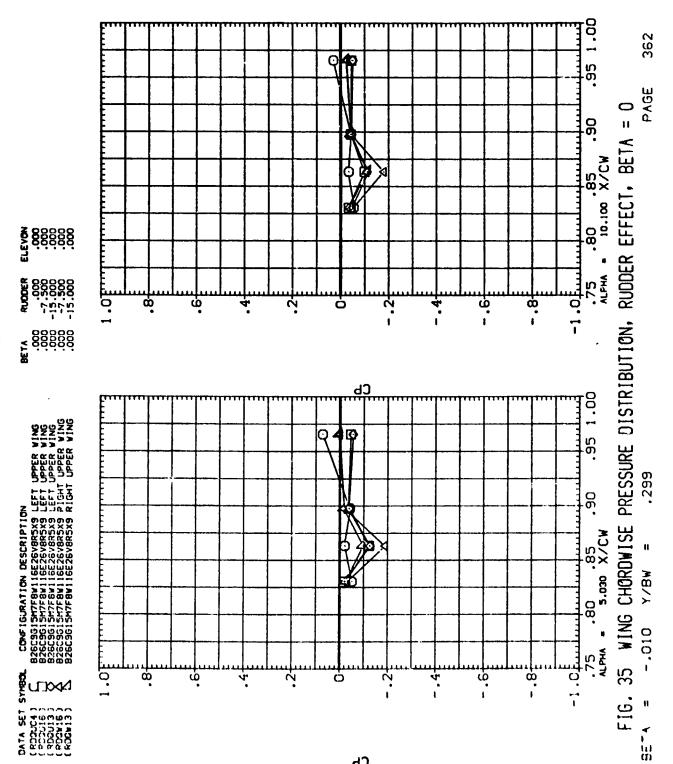
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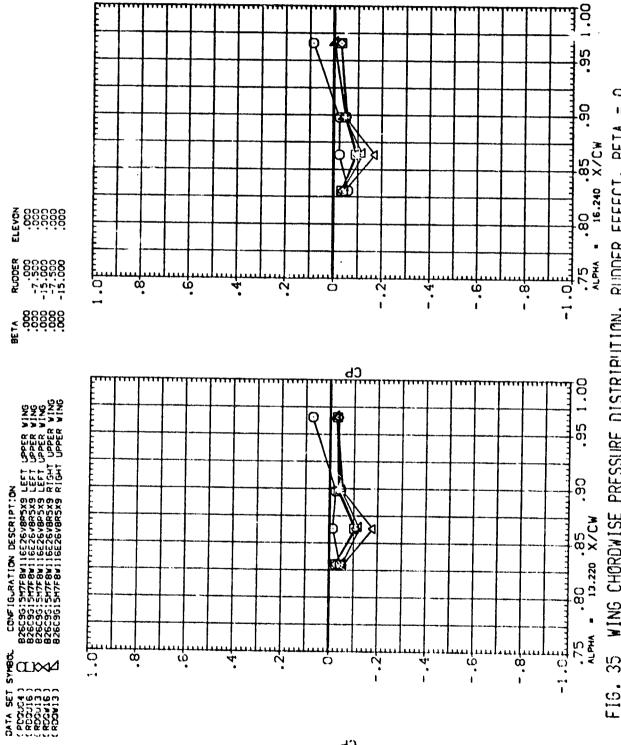
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RUDDER EFFECT, BETA = 0 FIG. 35 WING CHORDWISE PRESSURE DISTRIBUTION, ATEE

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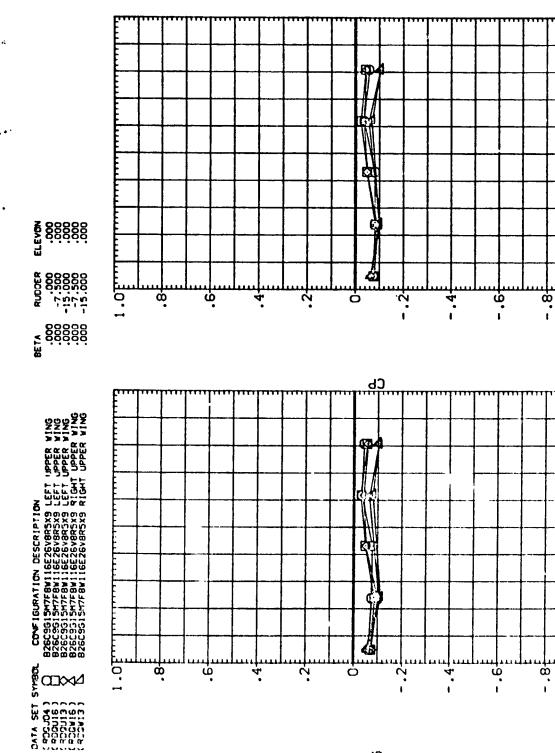
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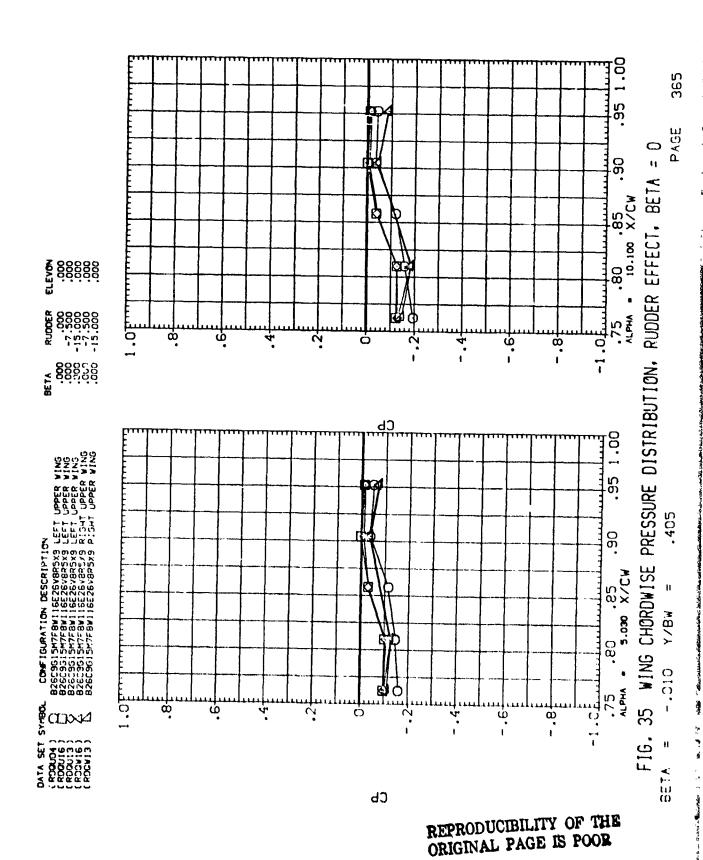
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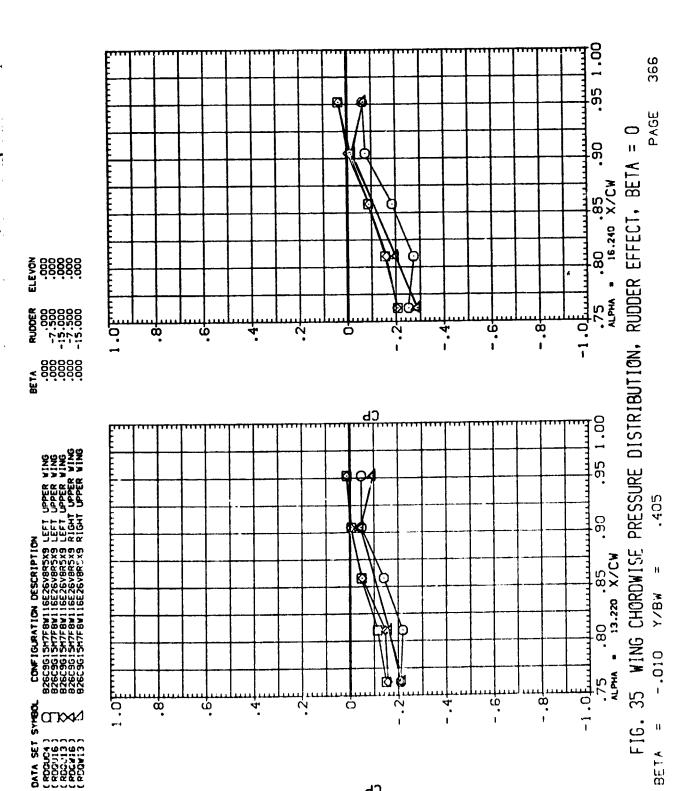
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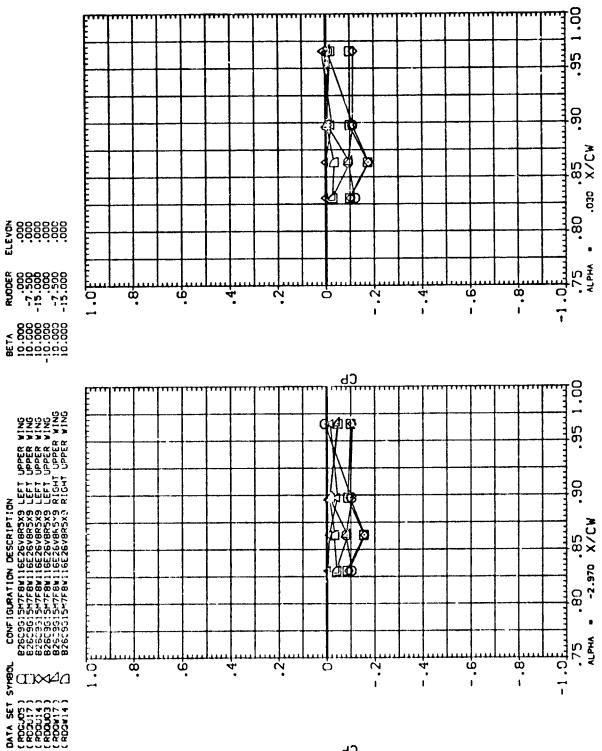


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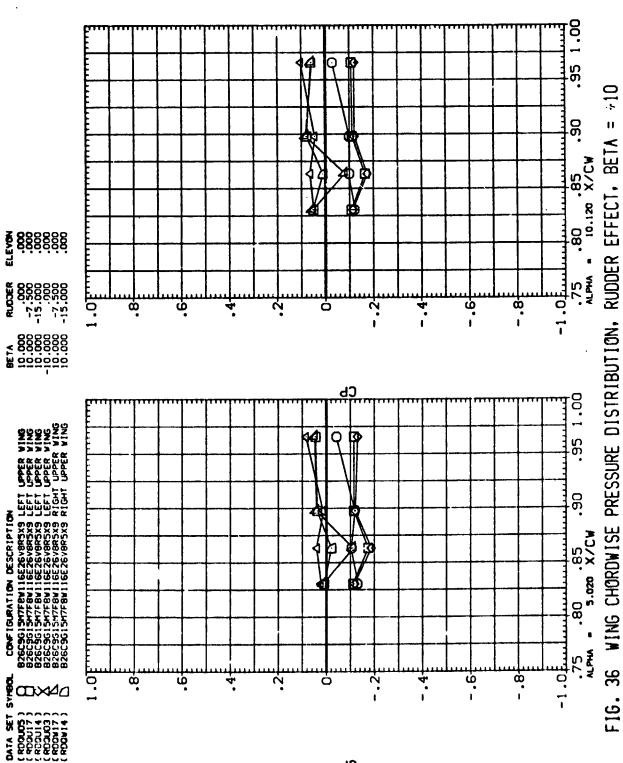
PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = +10 PAGE FIG. 36 WING CHORDWISE

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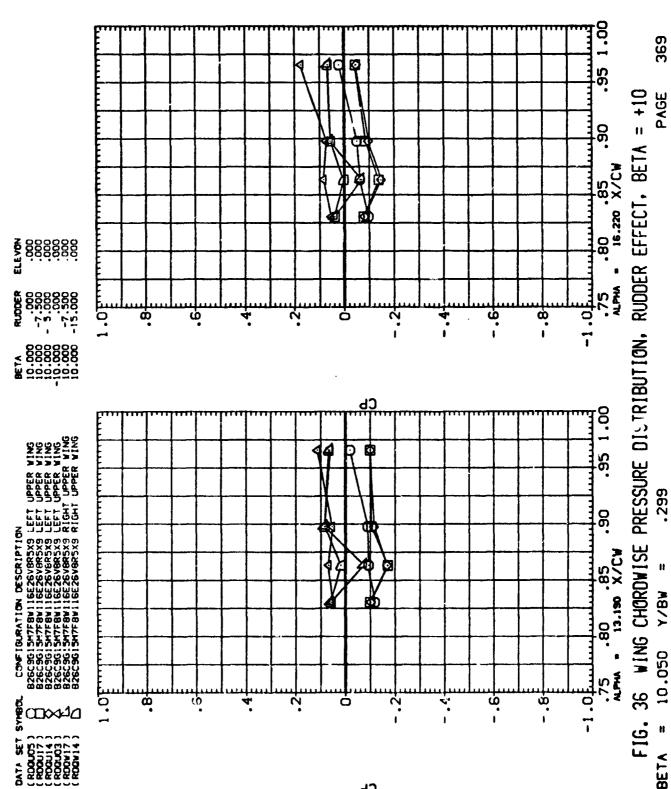
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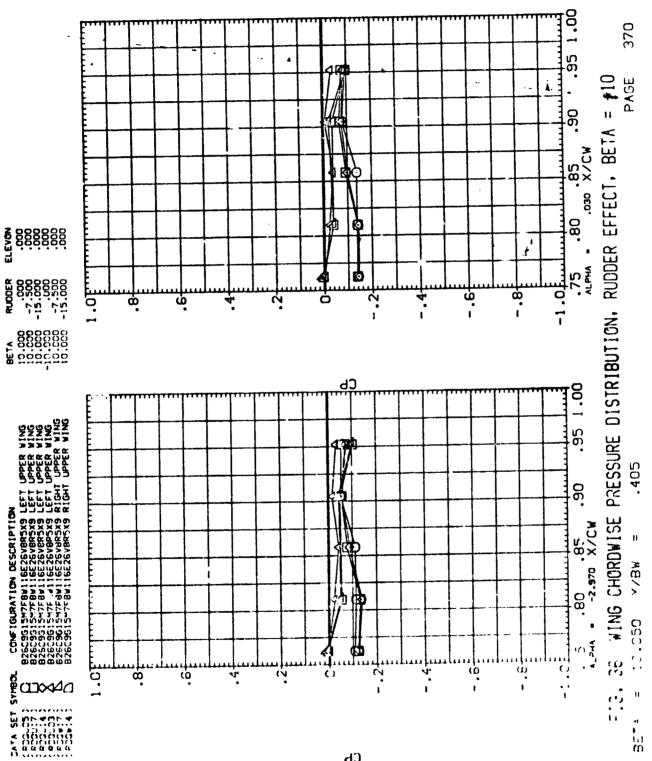
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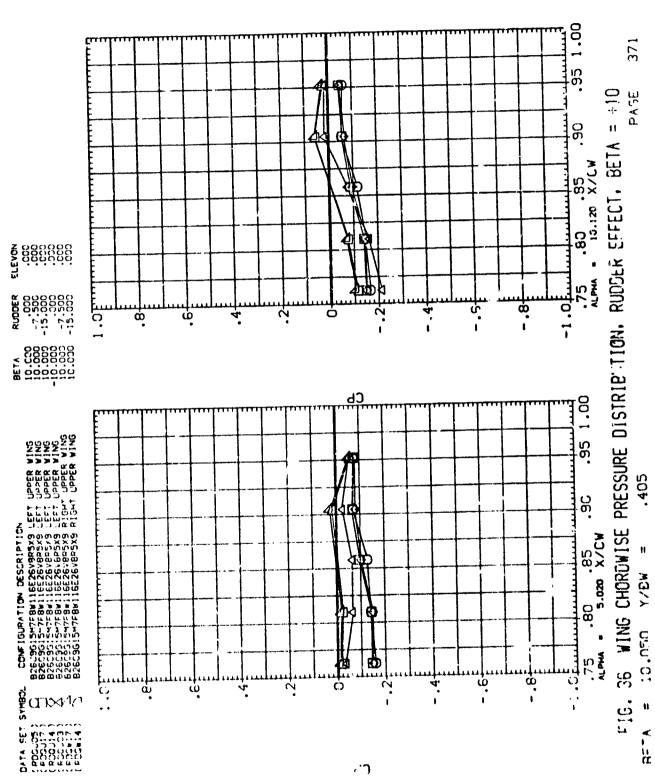


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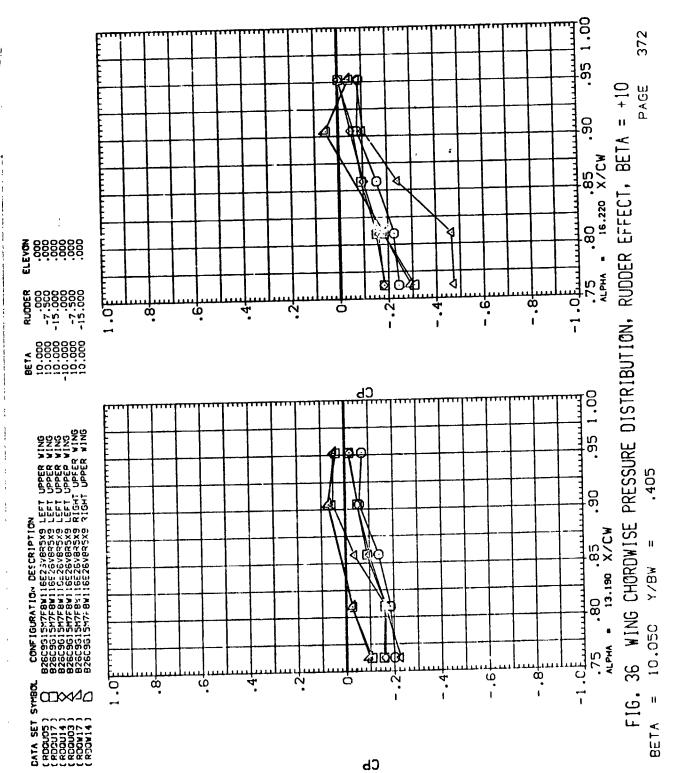
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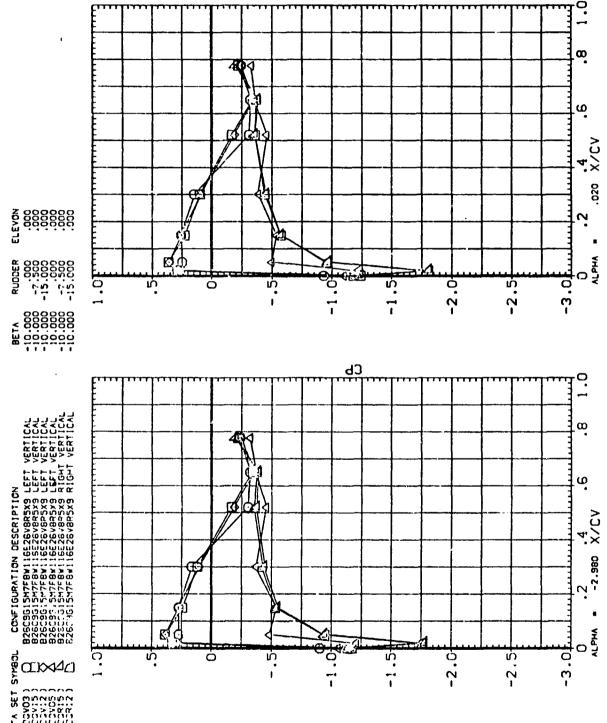
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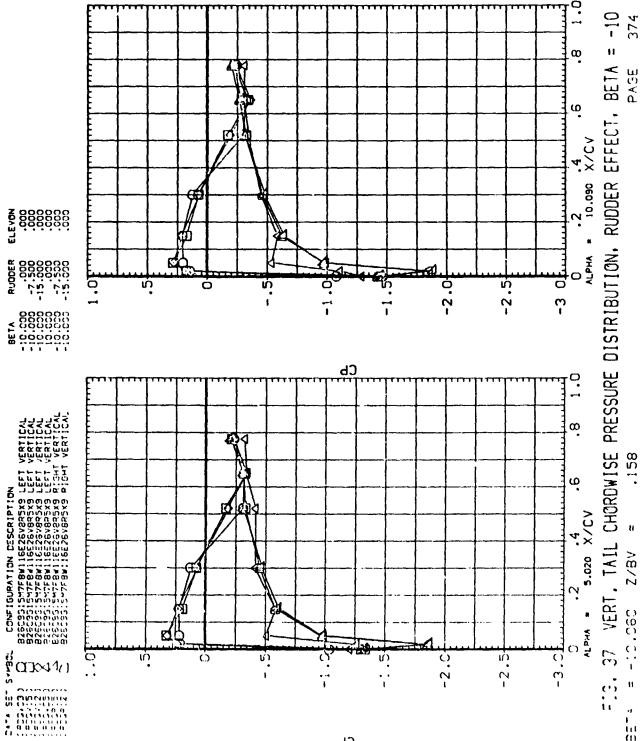
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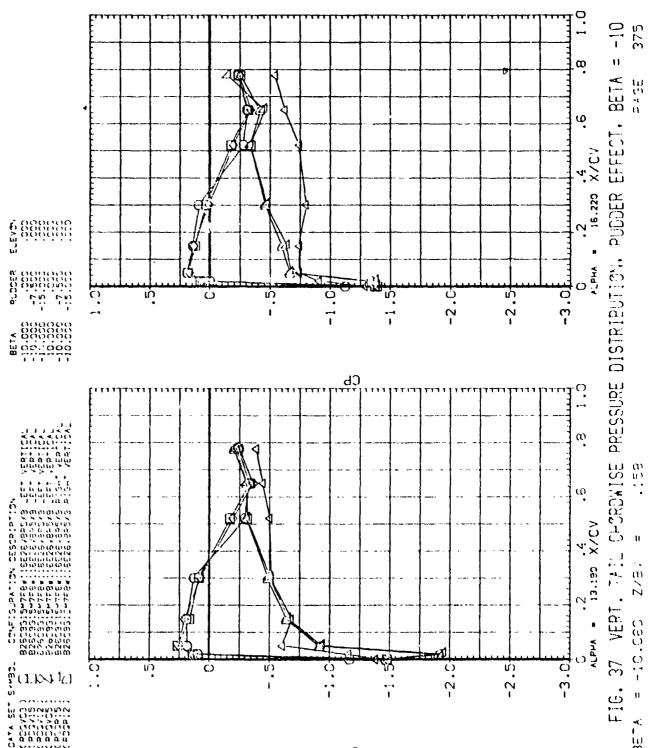
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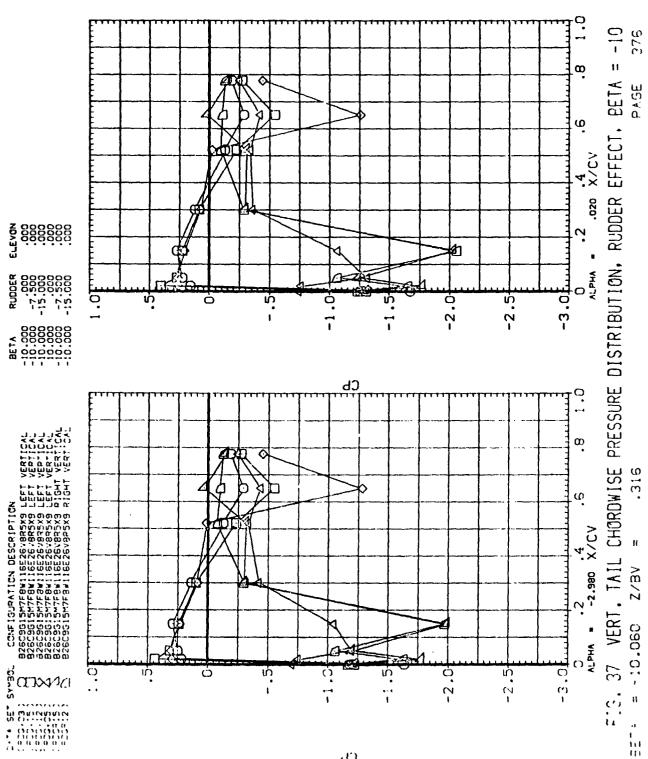
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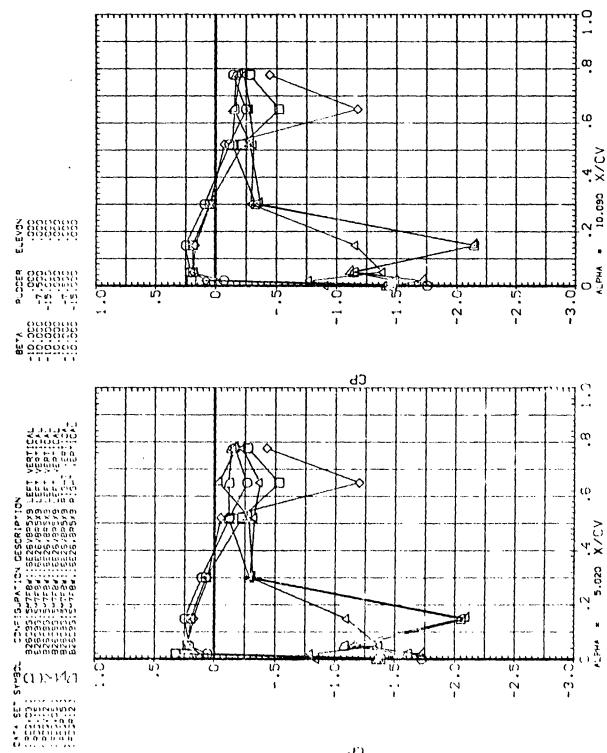
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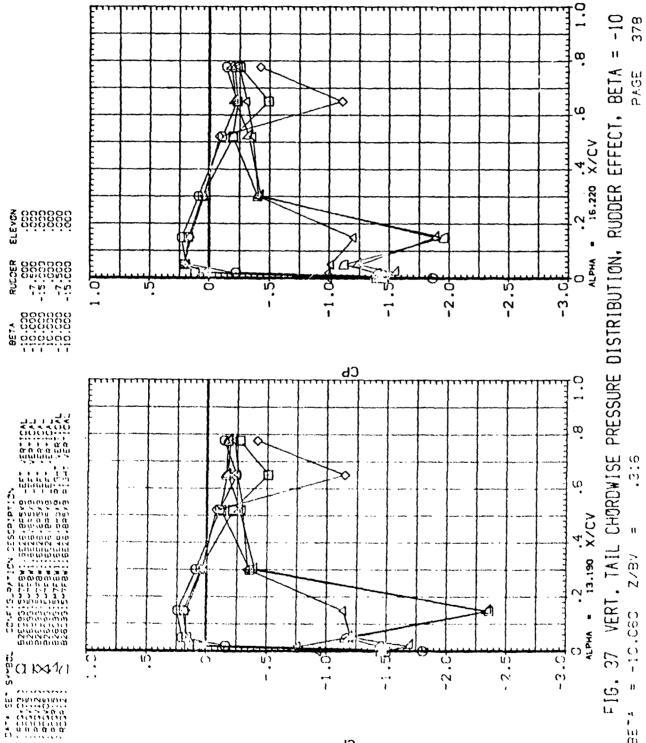
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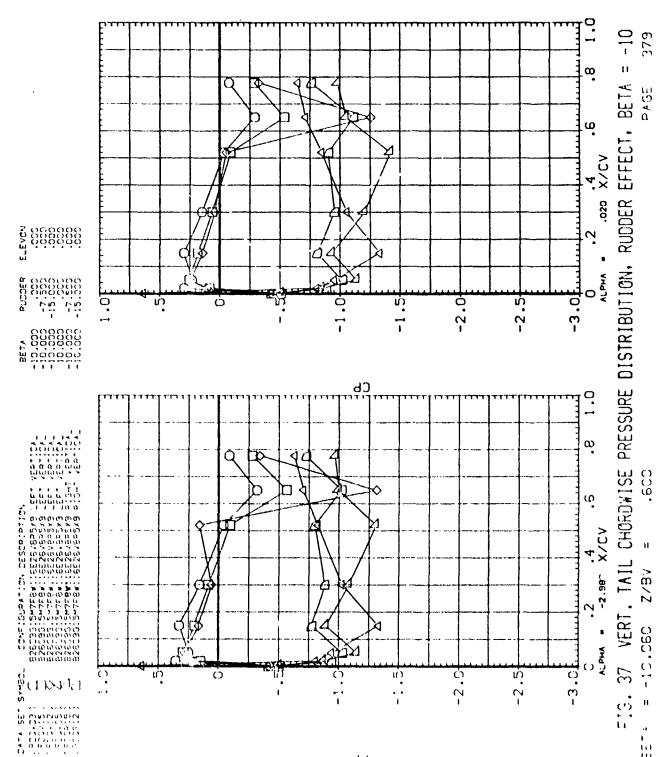
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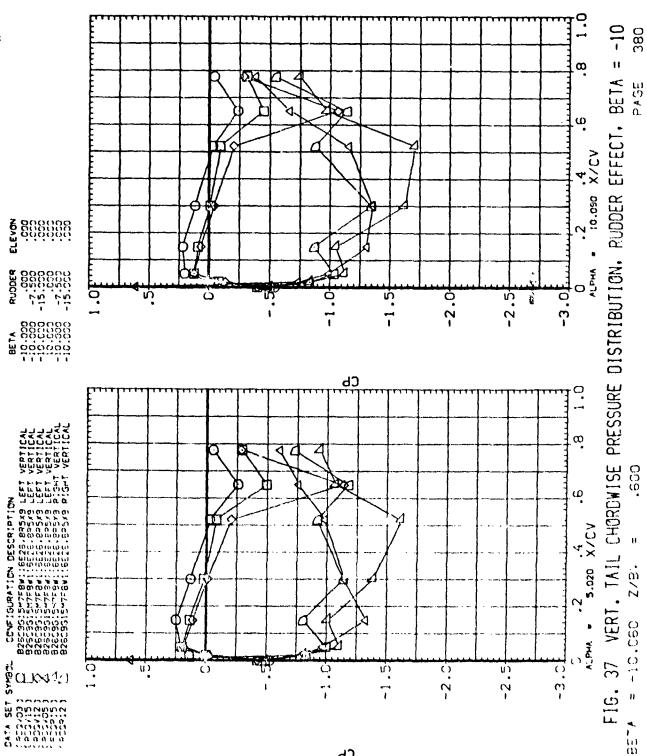
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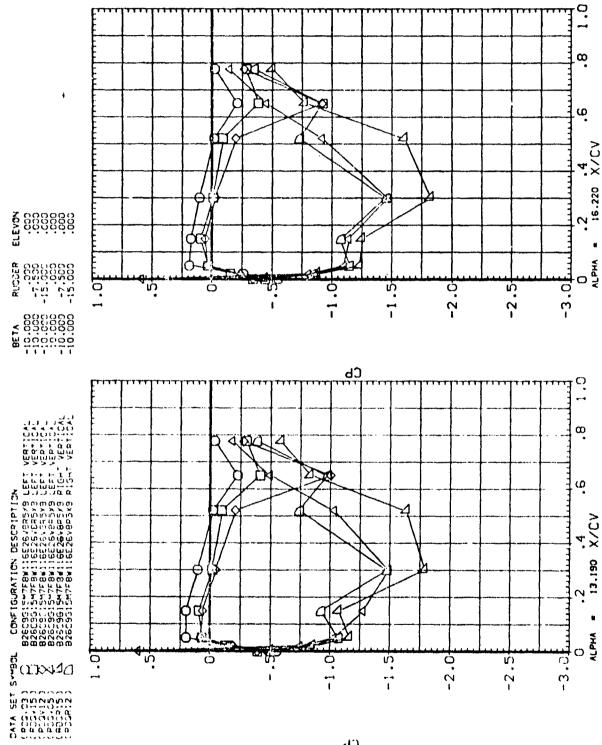
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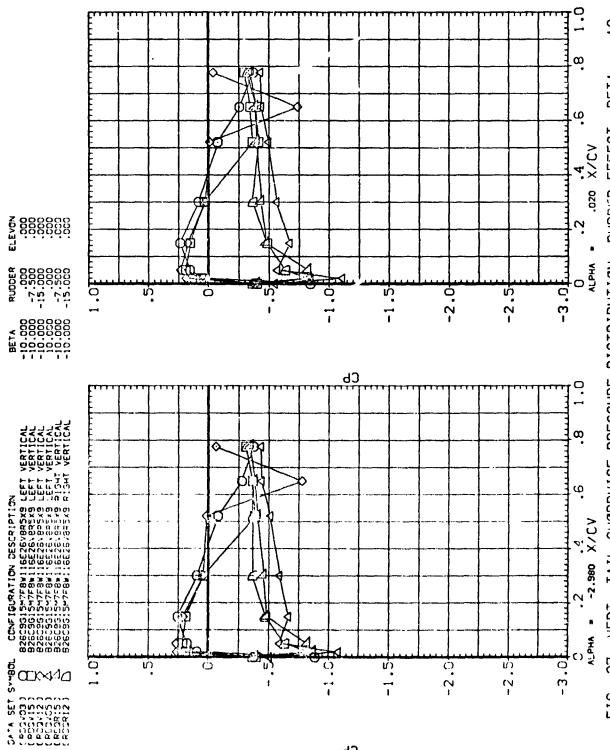


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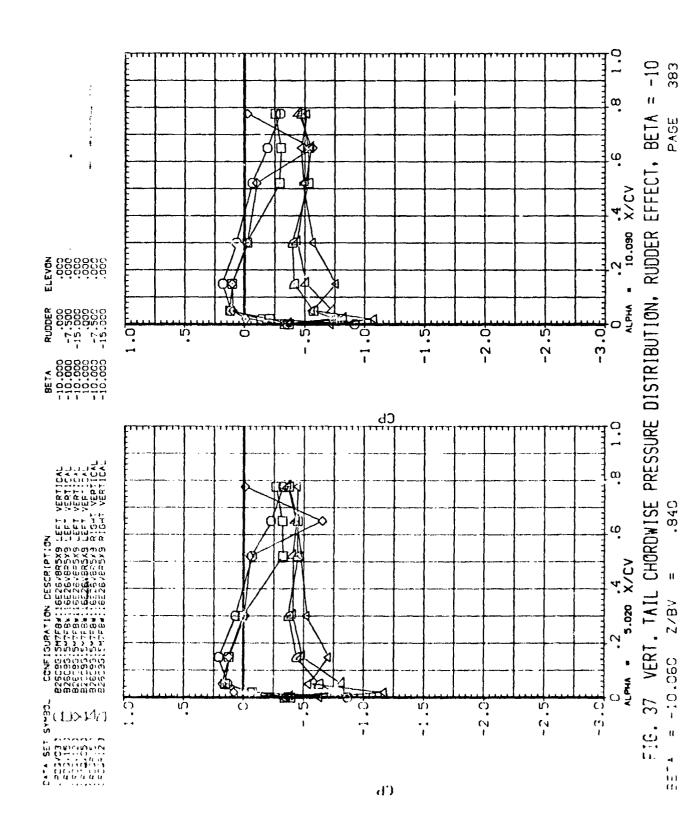


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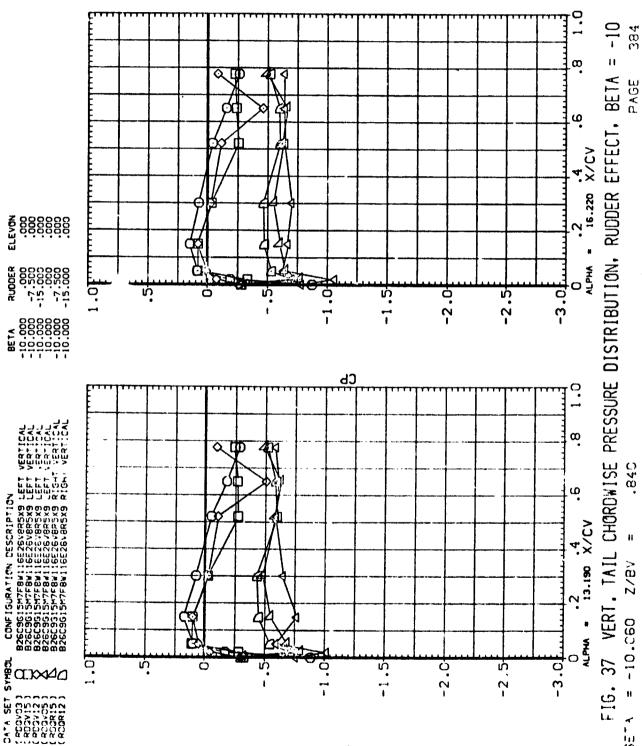
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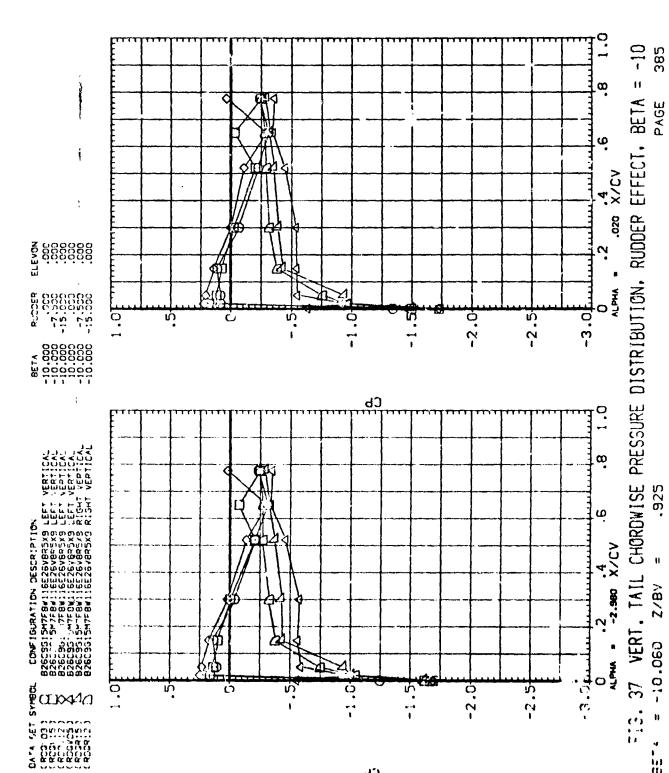


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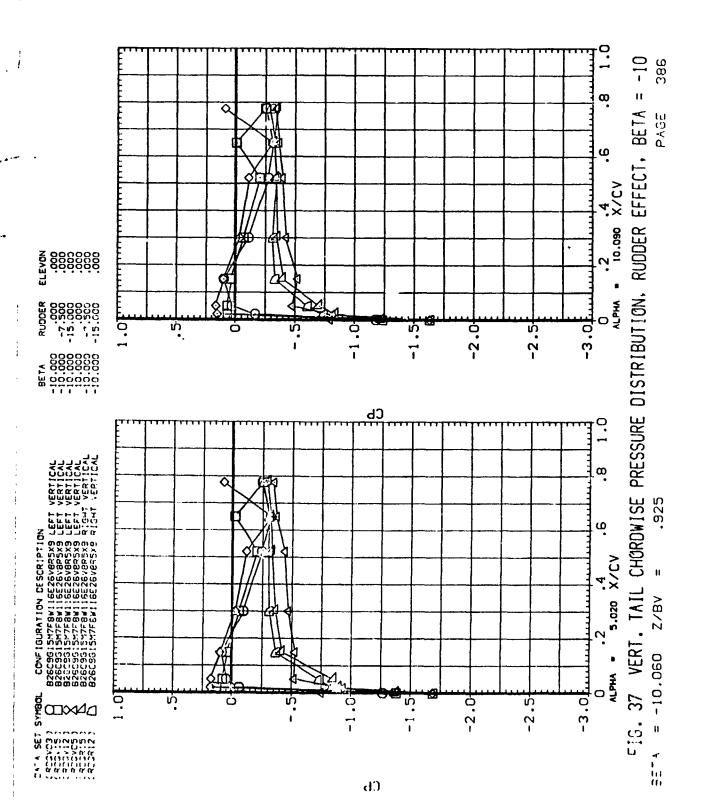
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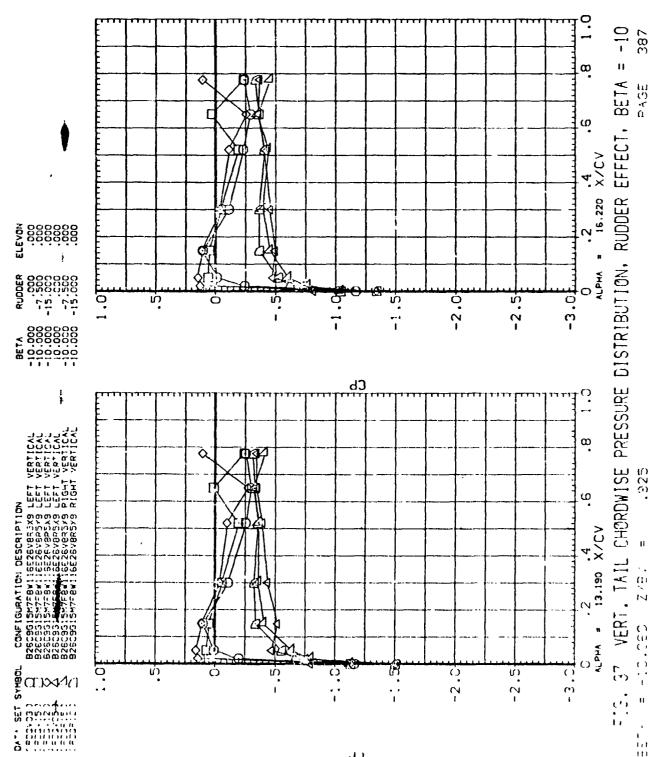
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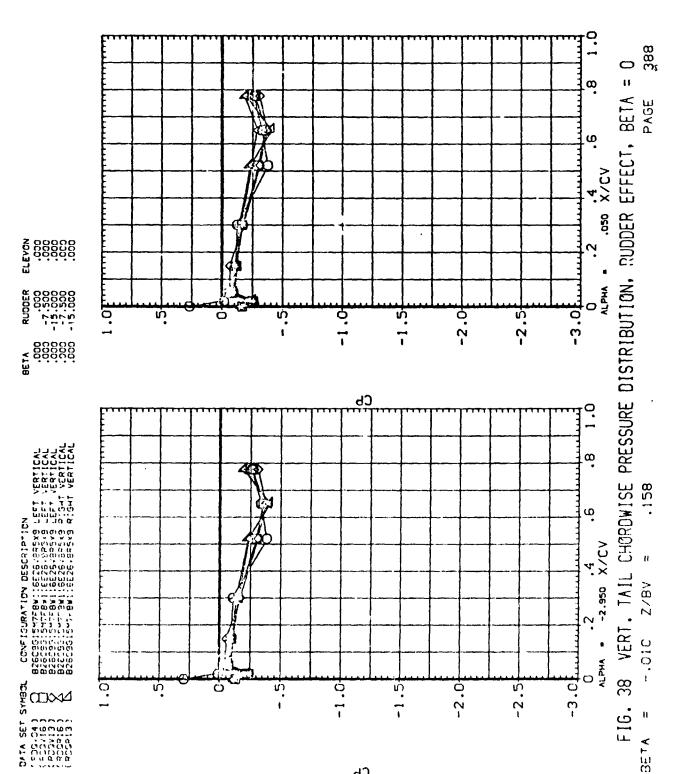


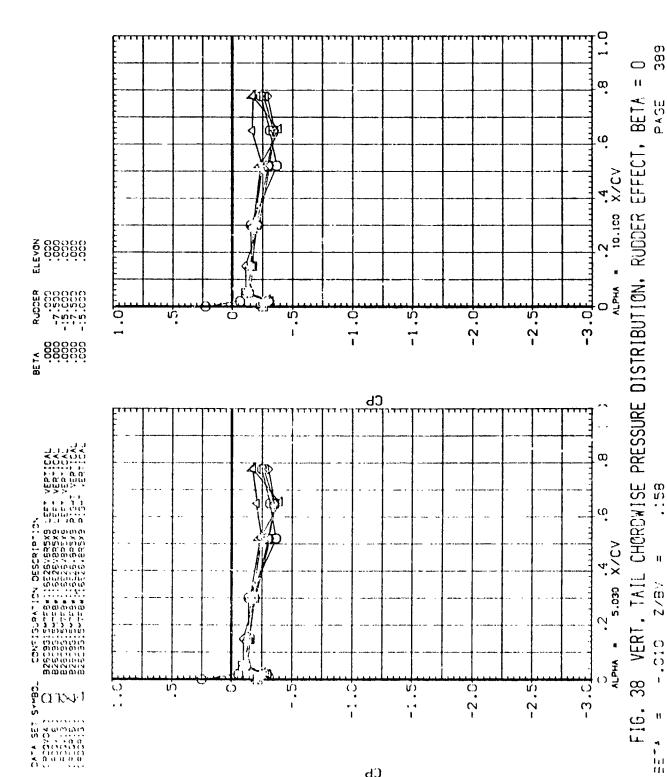
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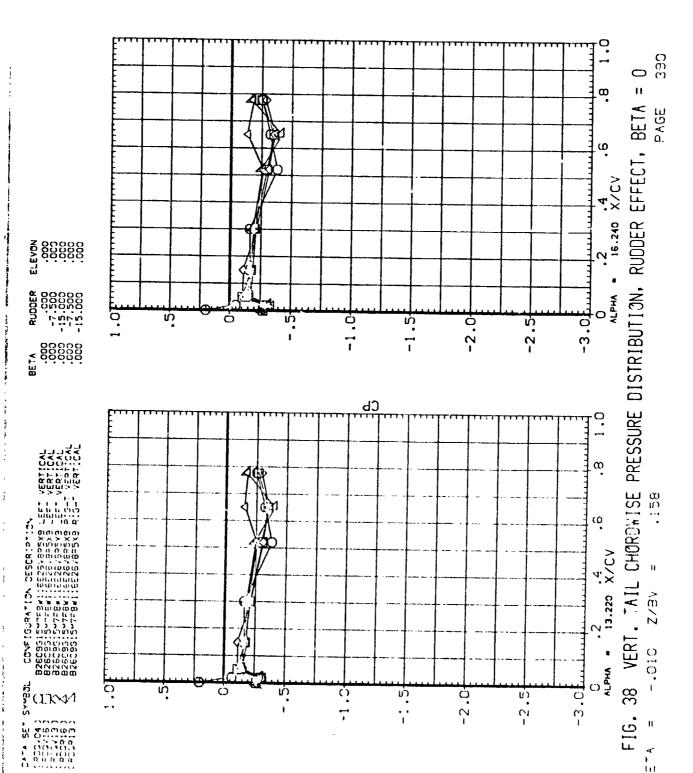
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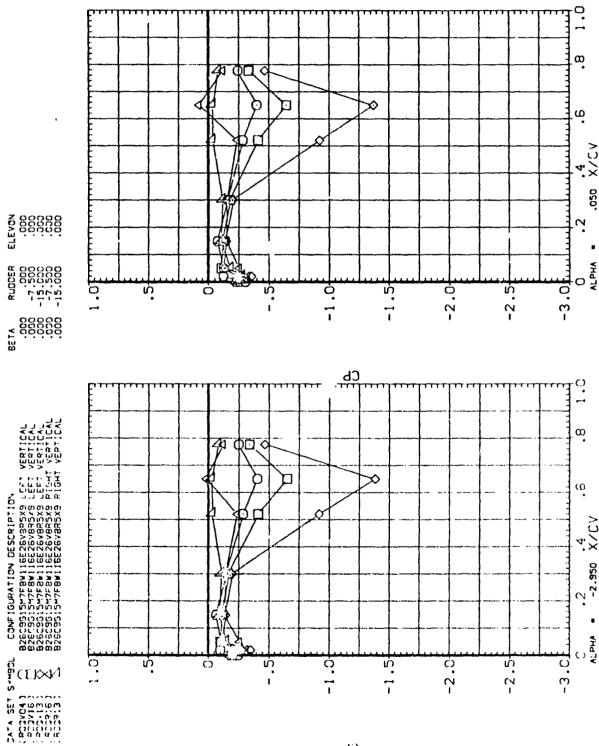


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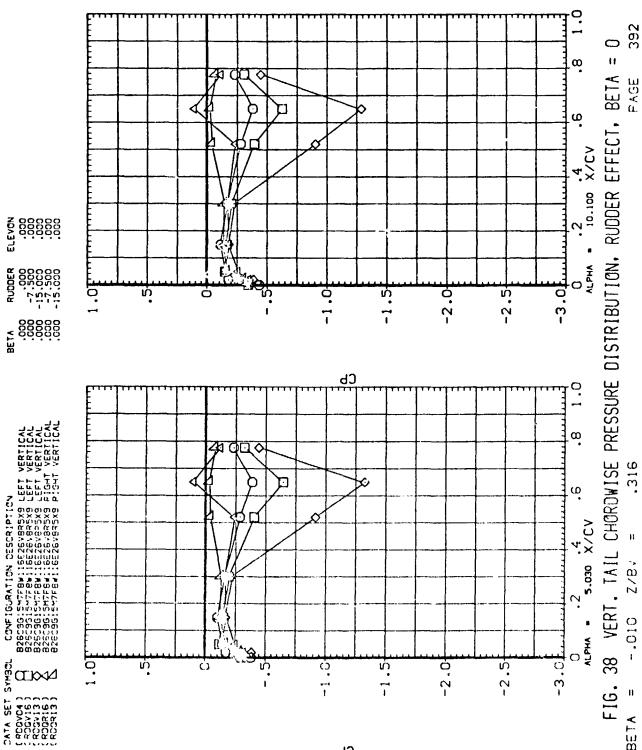
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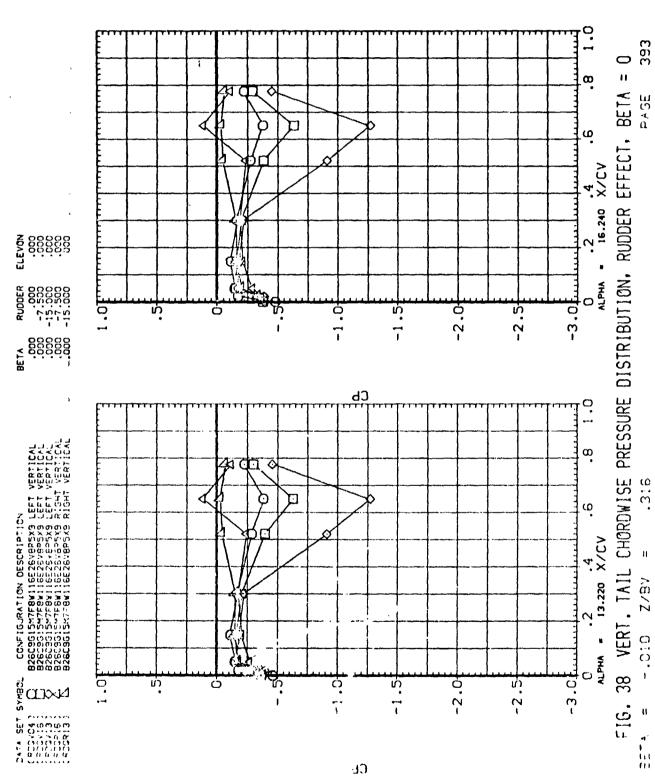
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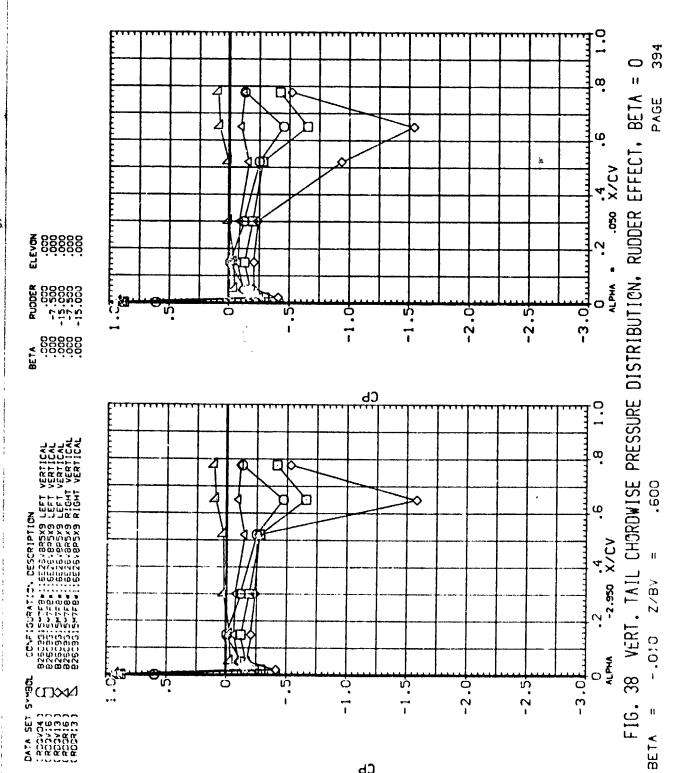
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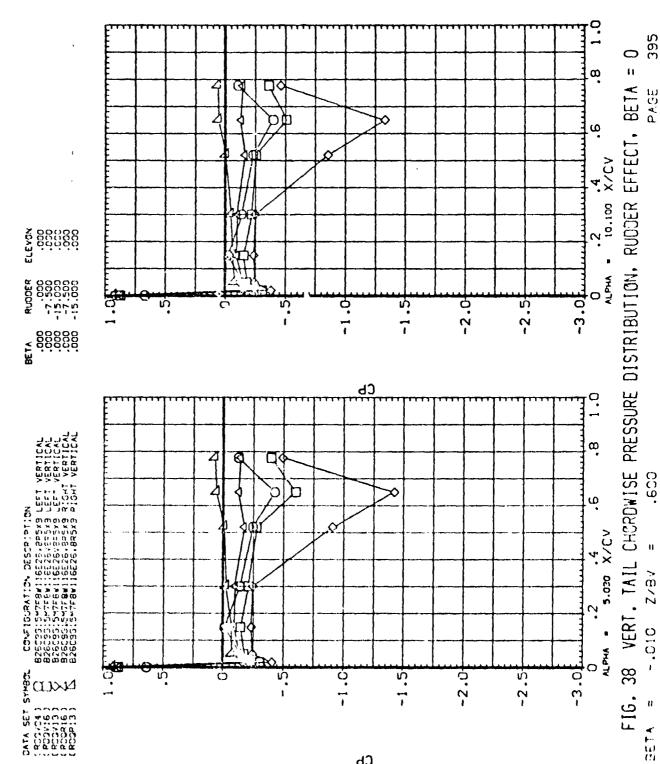
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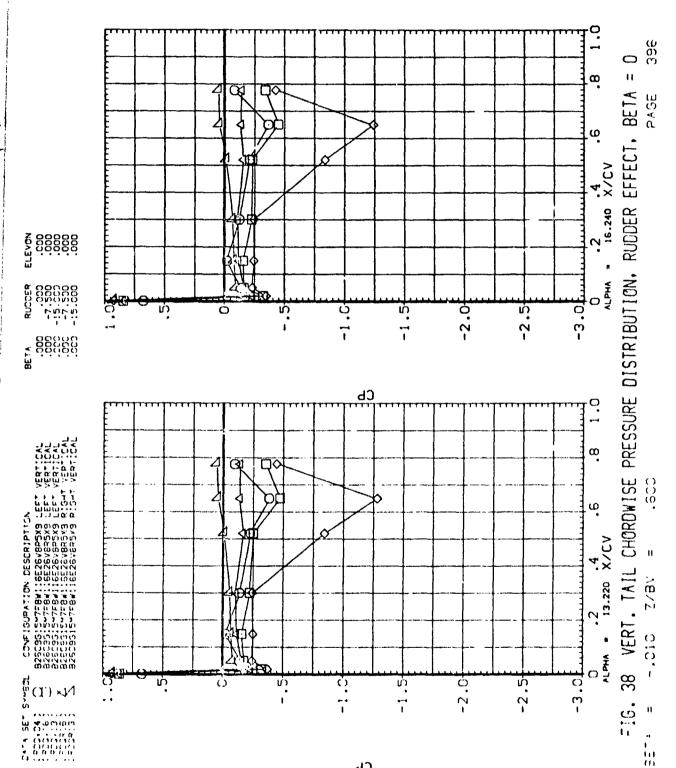
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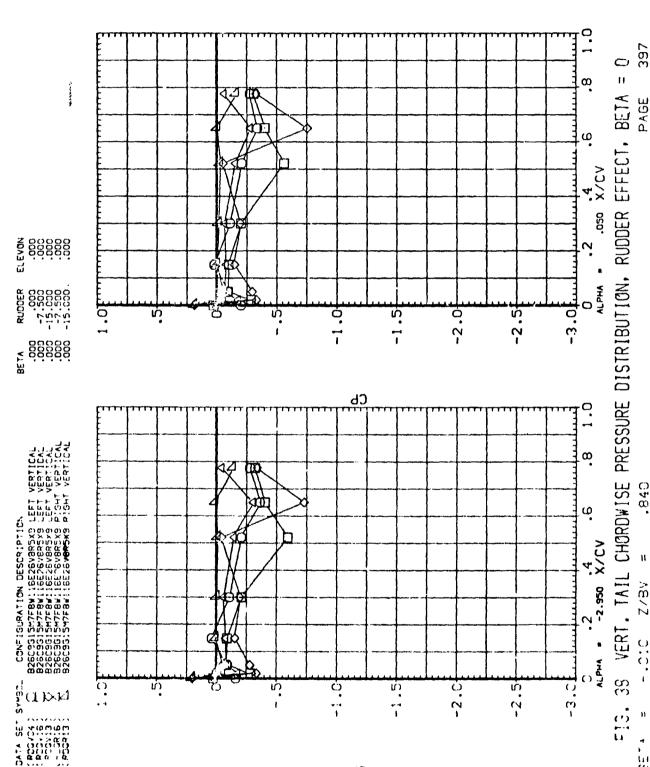
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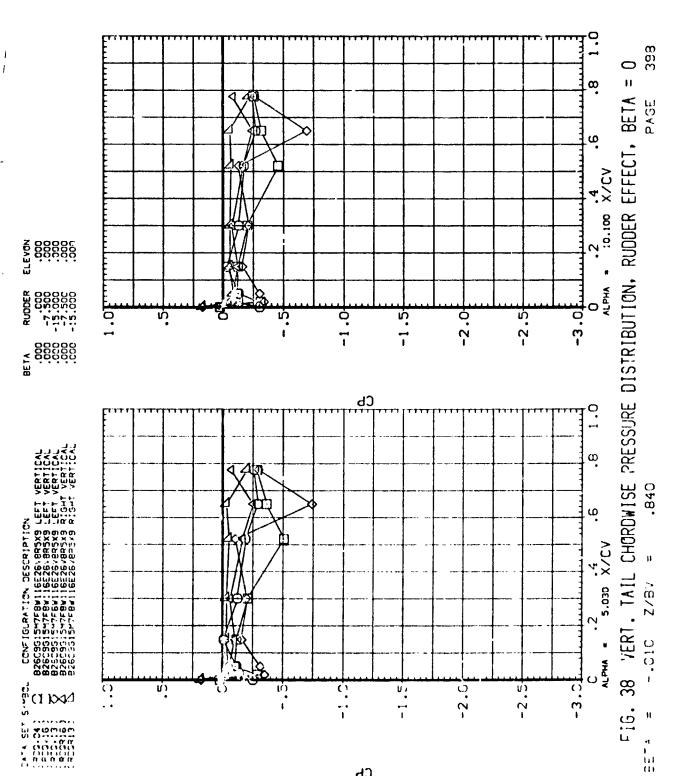


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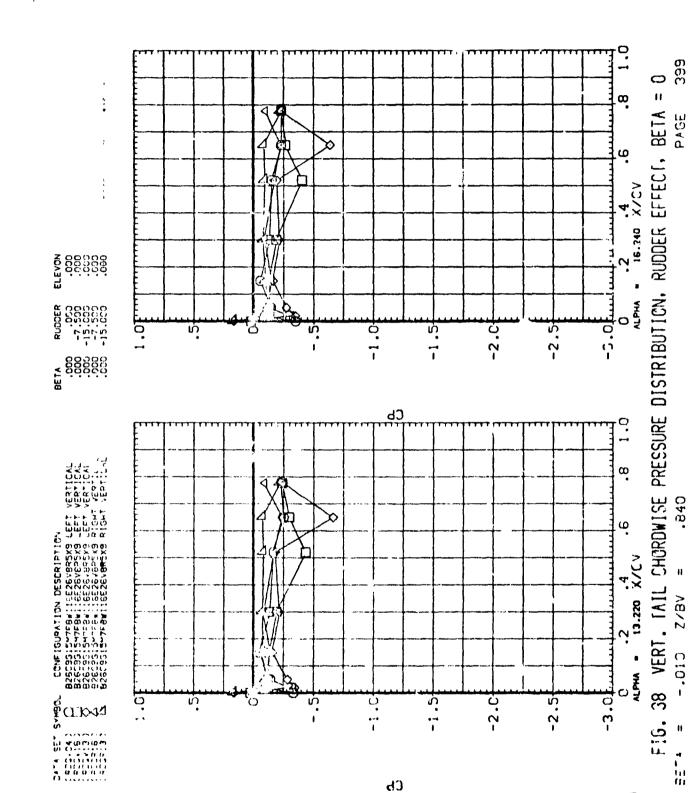
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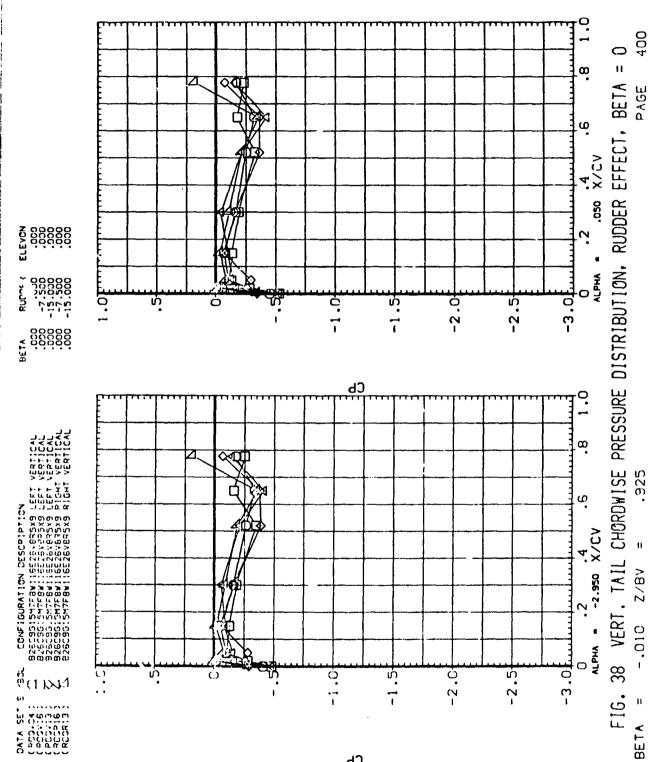


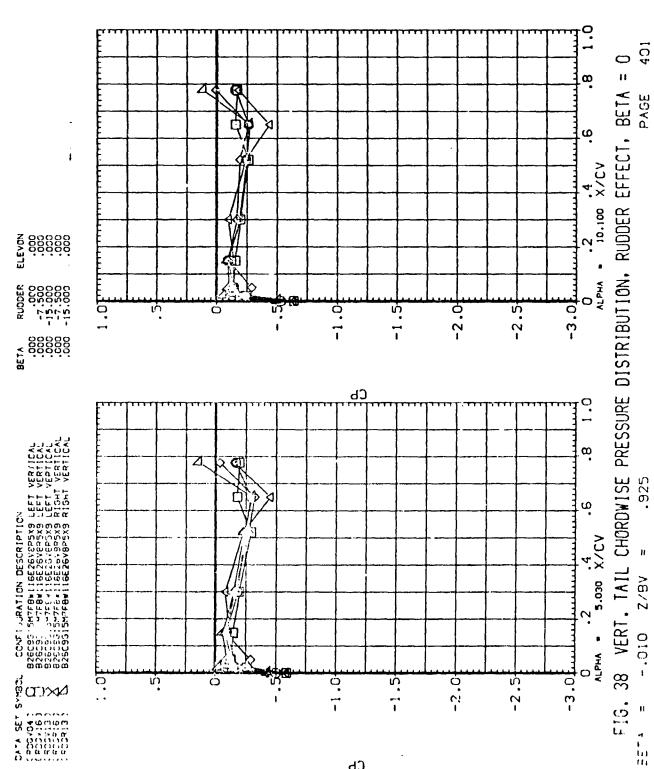
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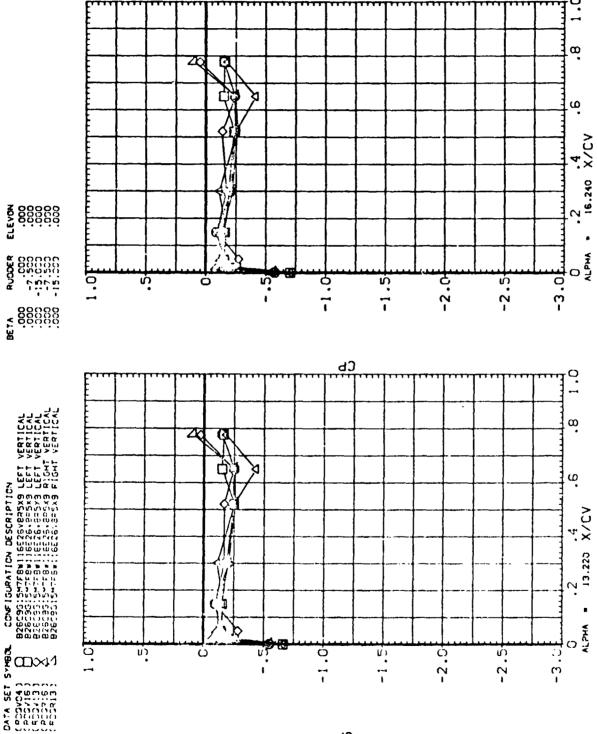
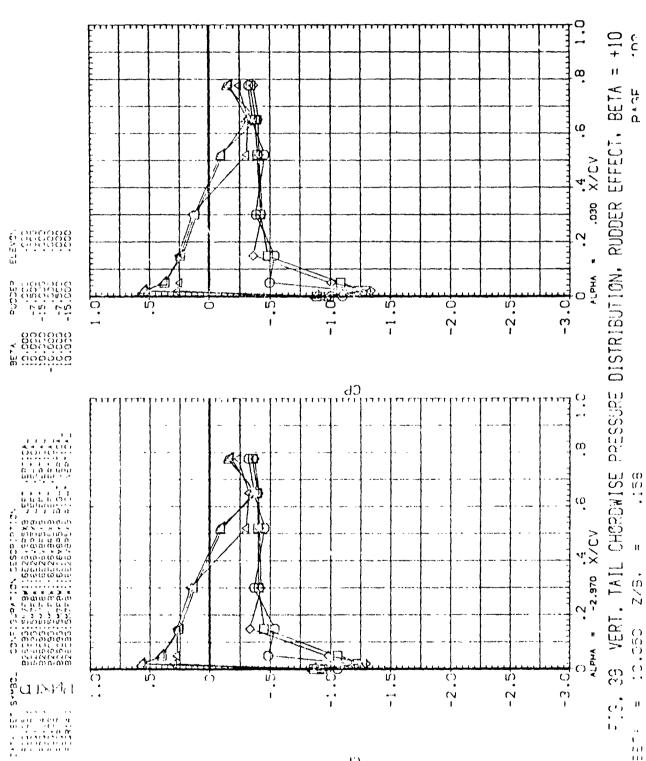


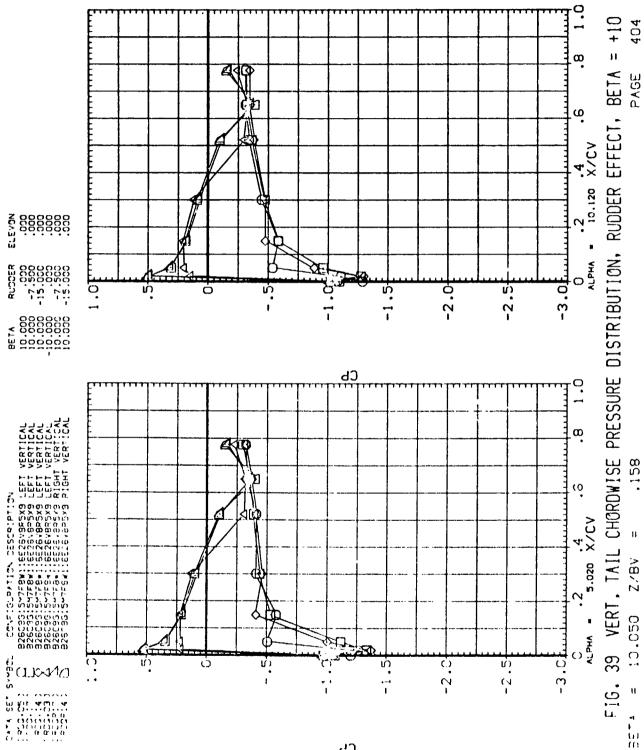
FIG. 38 VERI, TAIL CHORDWISE PRESSURE DISTRIBUTION, RUDDER EFFECT, BETA = A = -.010 Z/87 = .925 **∀** 11, (II)

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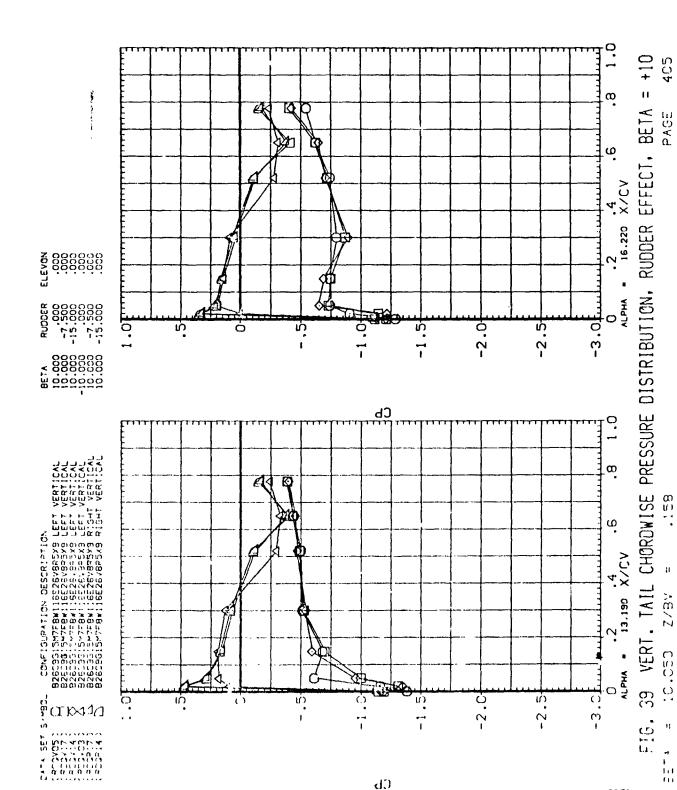
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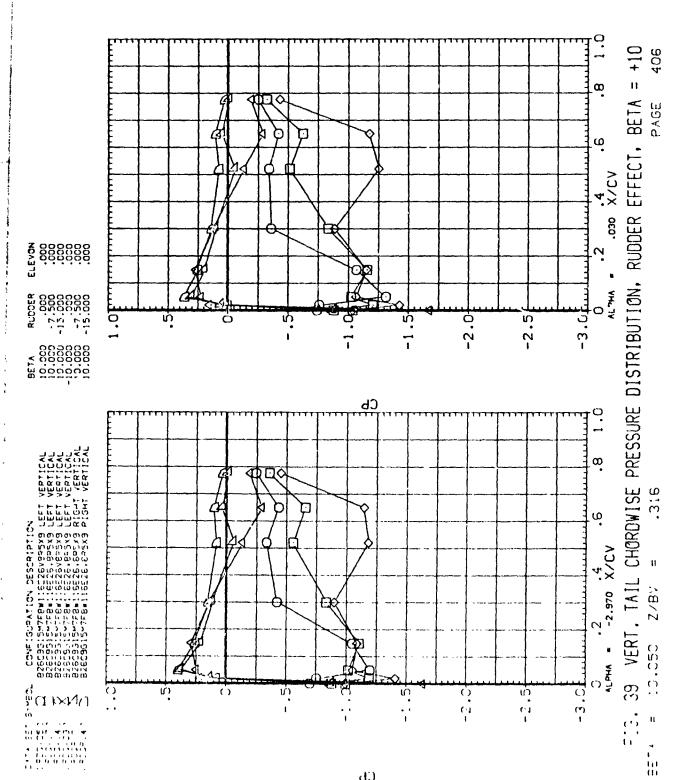
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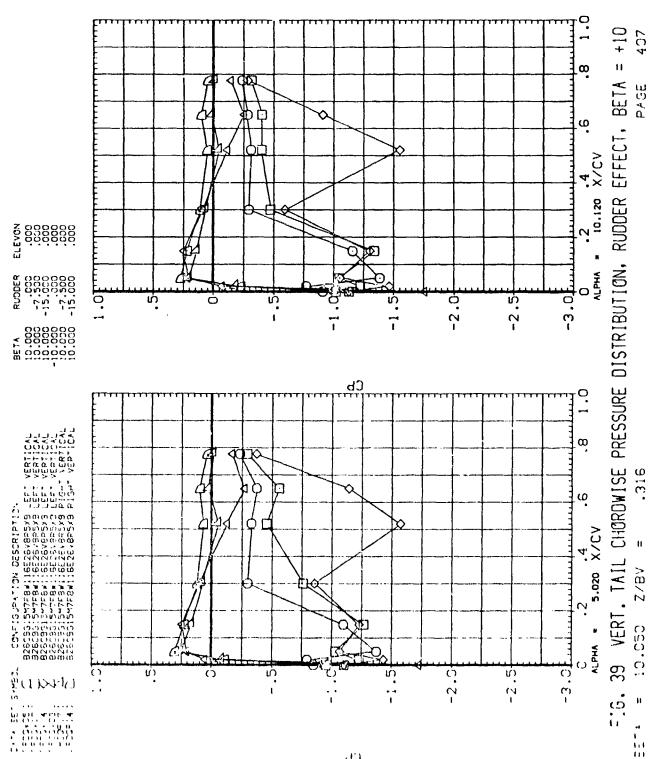
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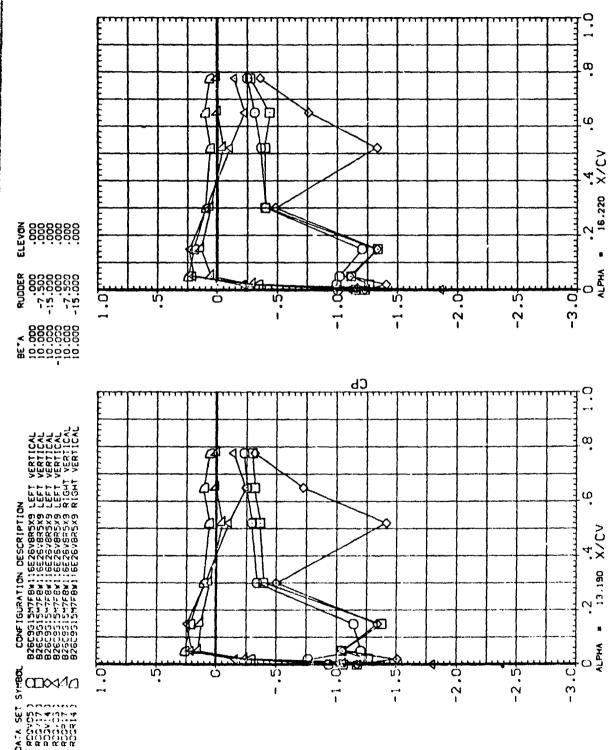
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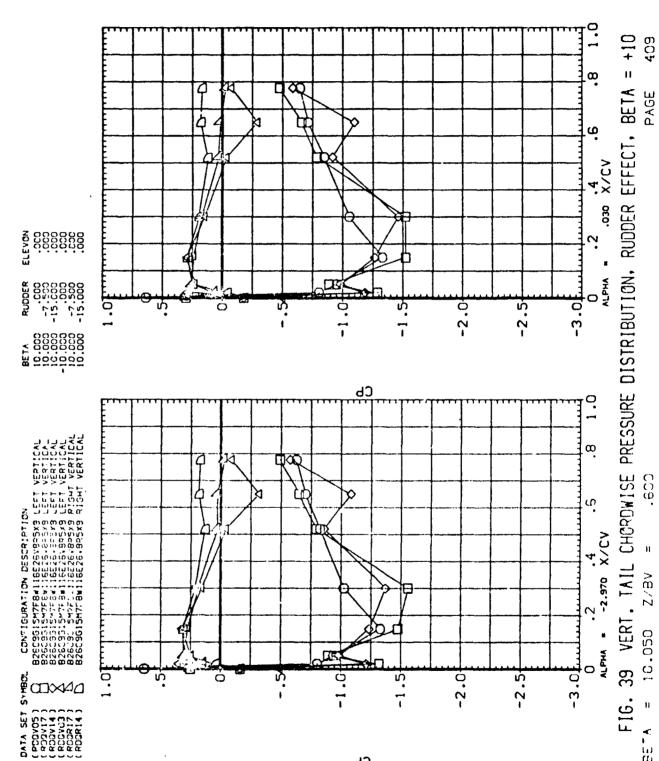
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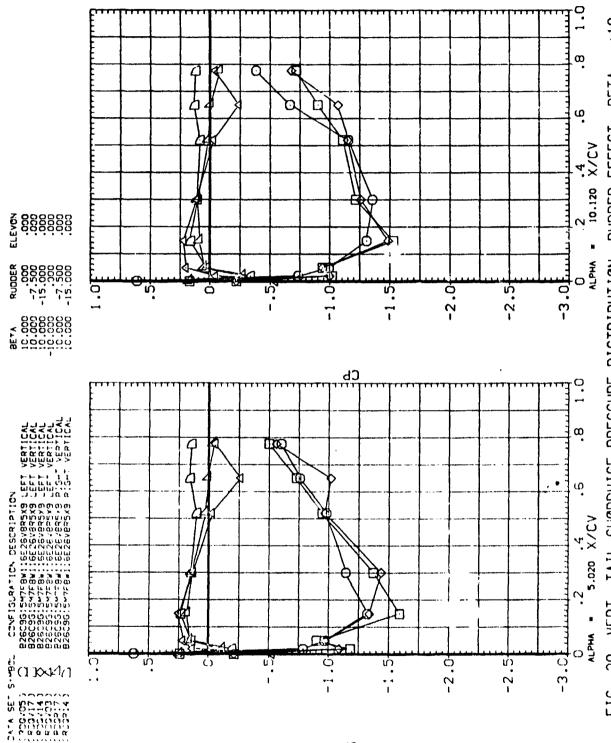
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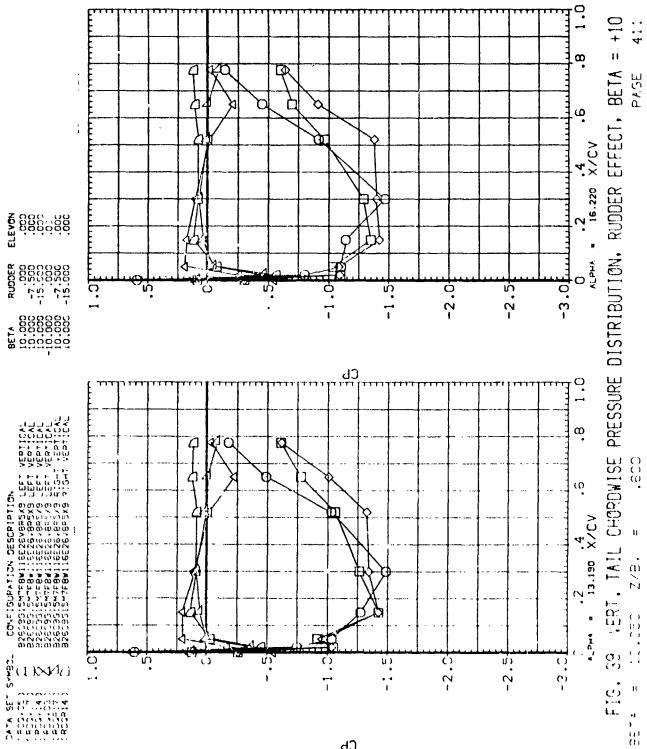
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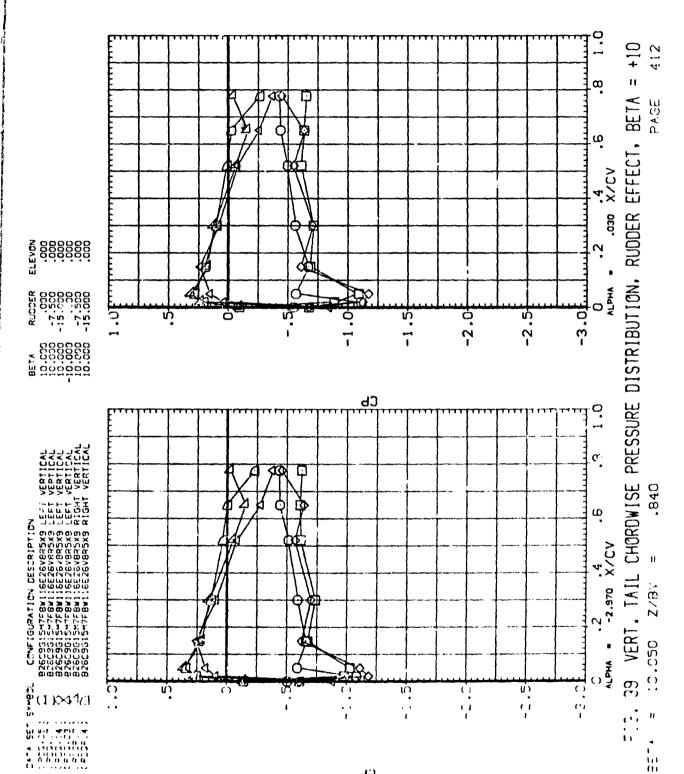
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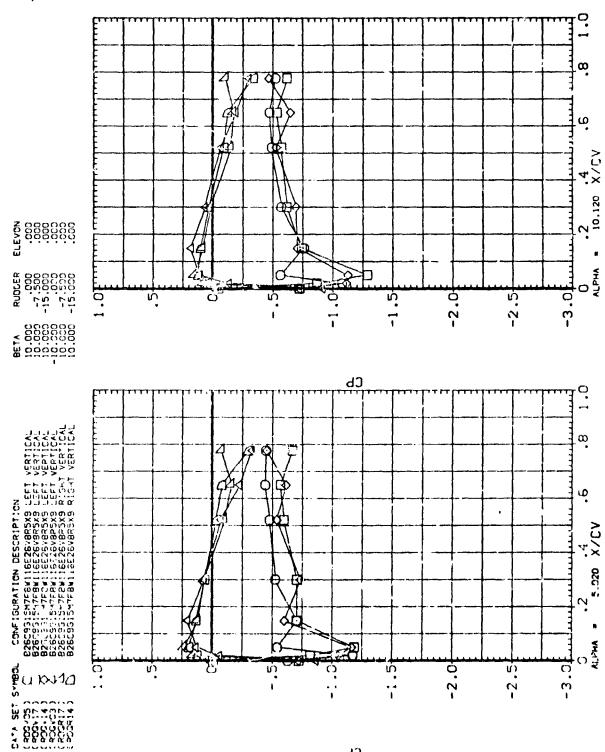
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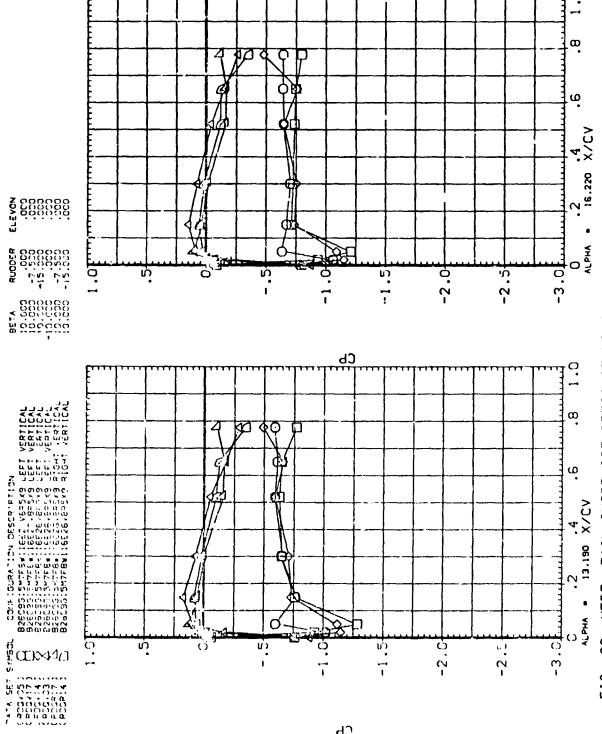


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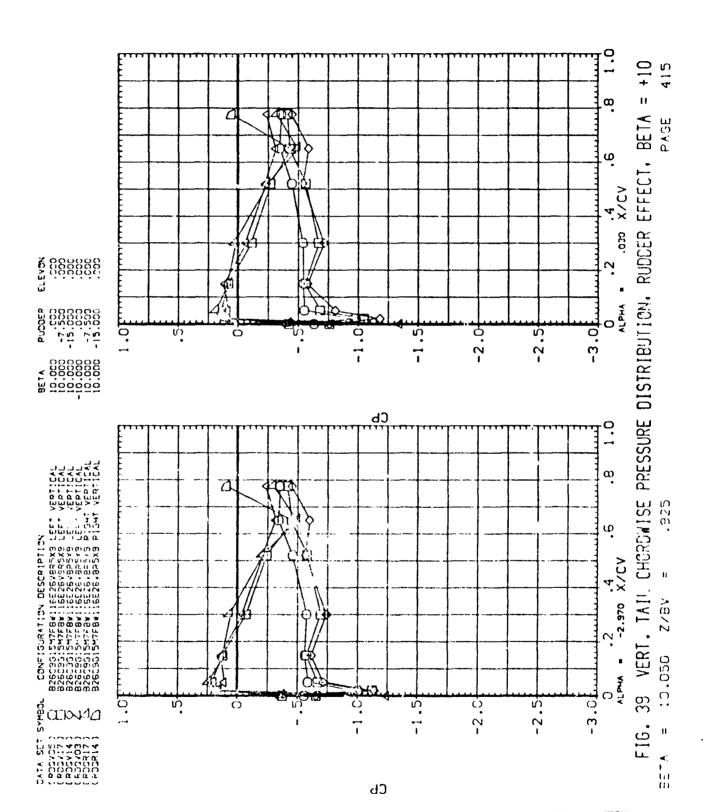
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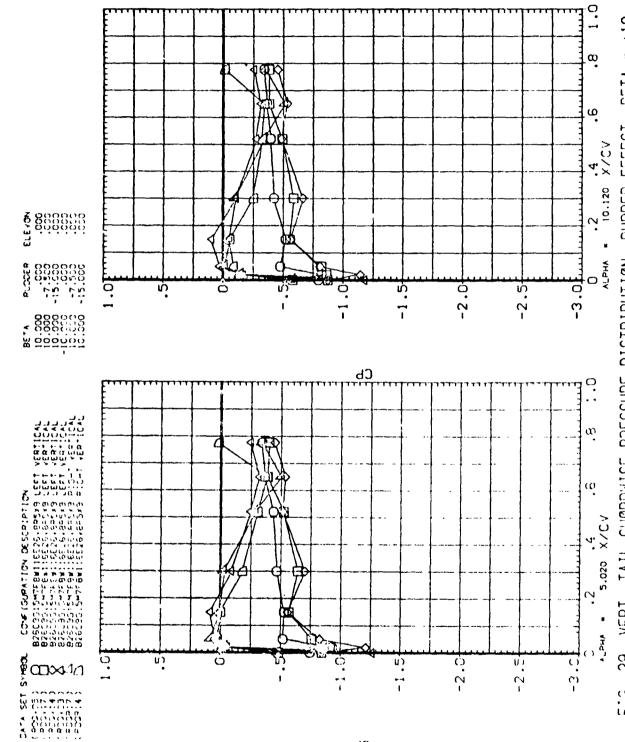


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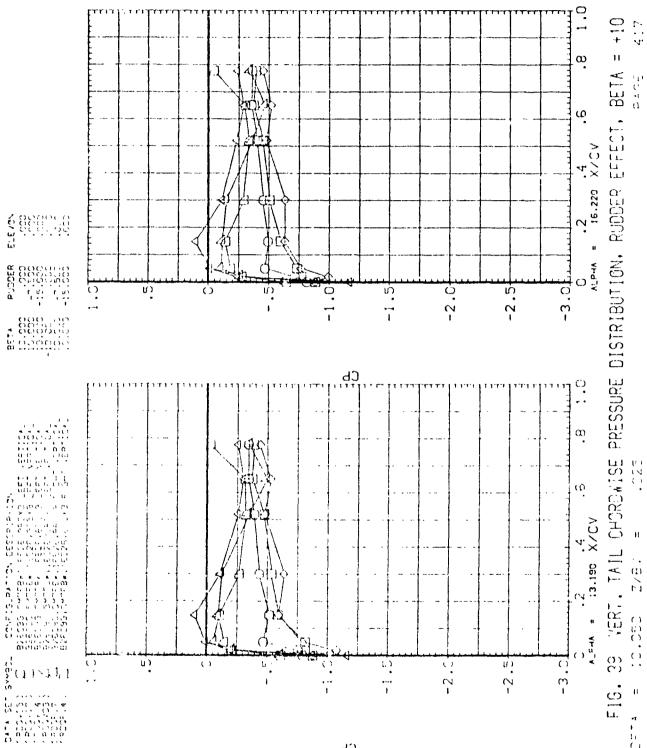
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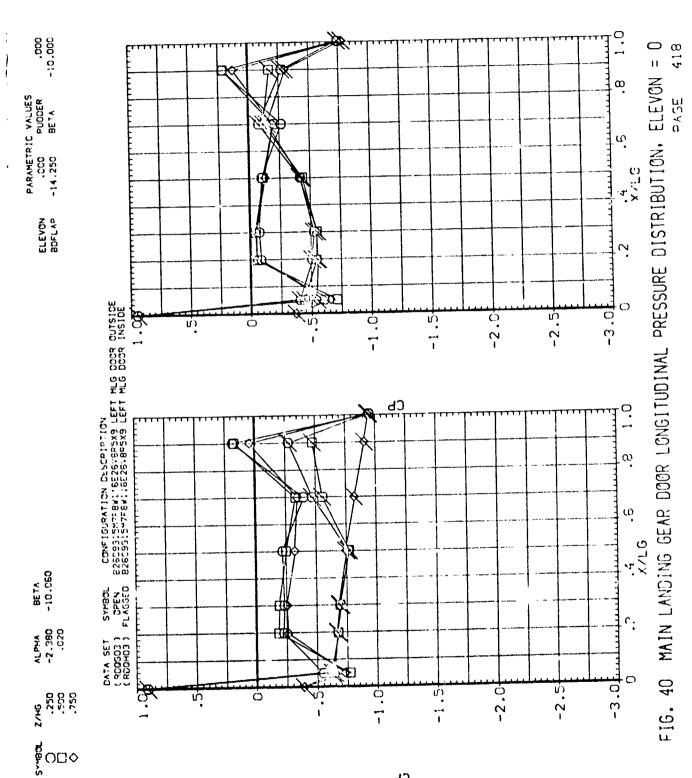
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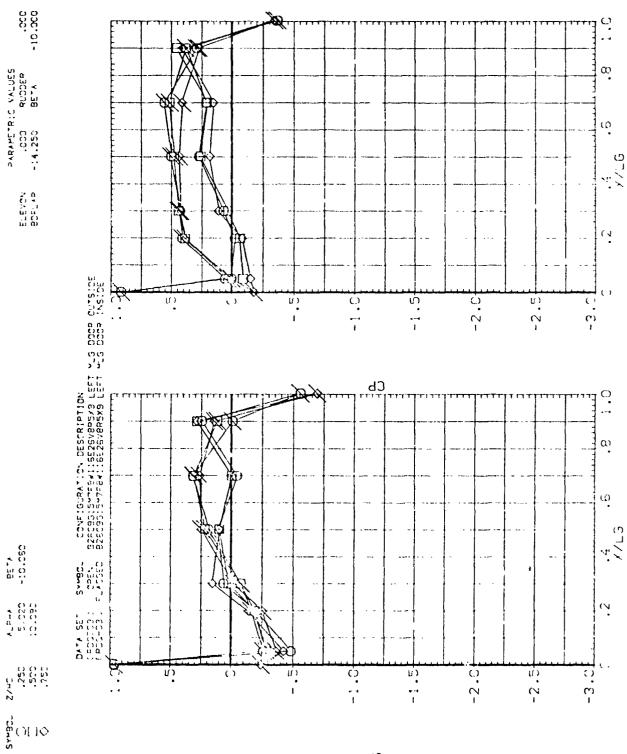
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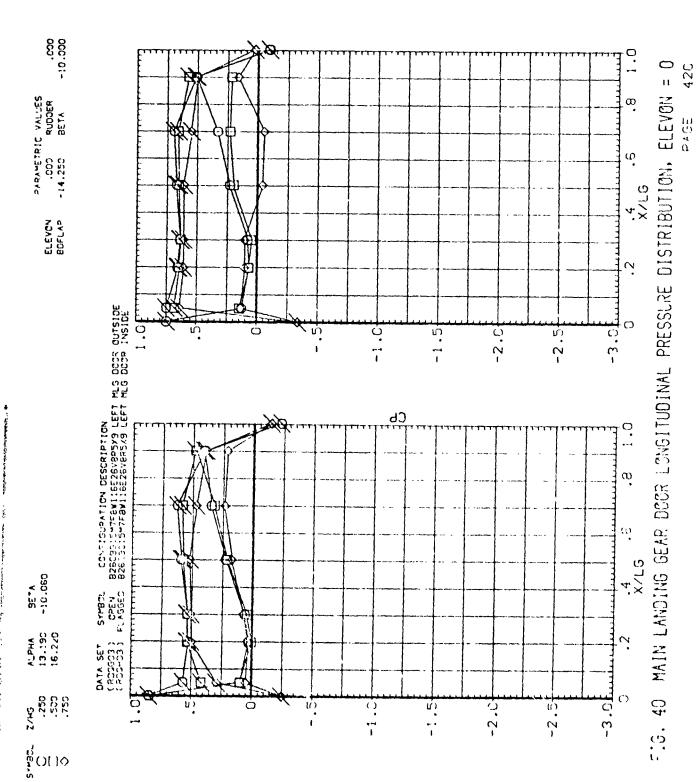
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ALDING GEAR DOOR LONGITUDINAL PRESSURE

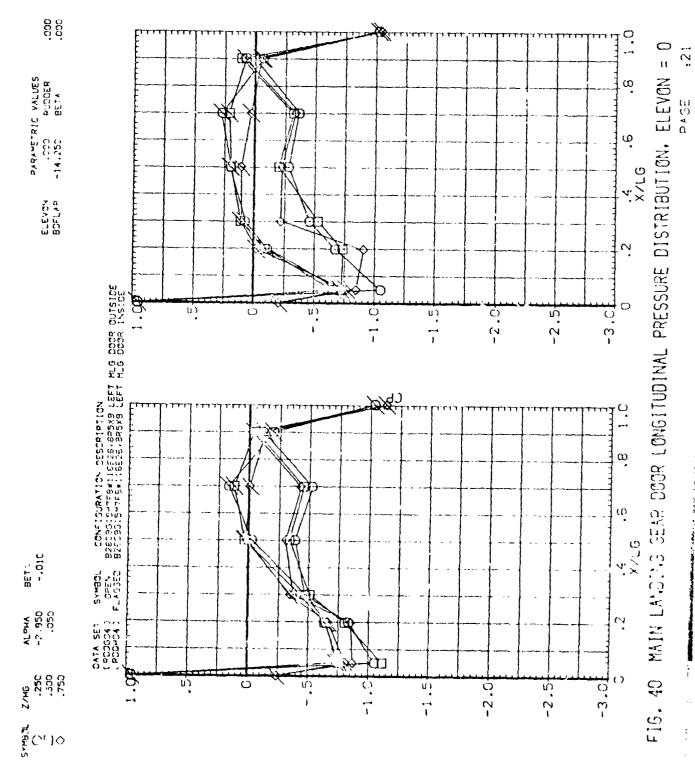
FIG. 40

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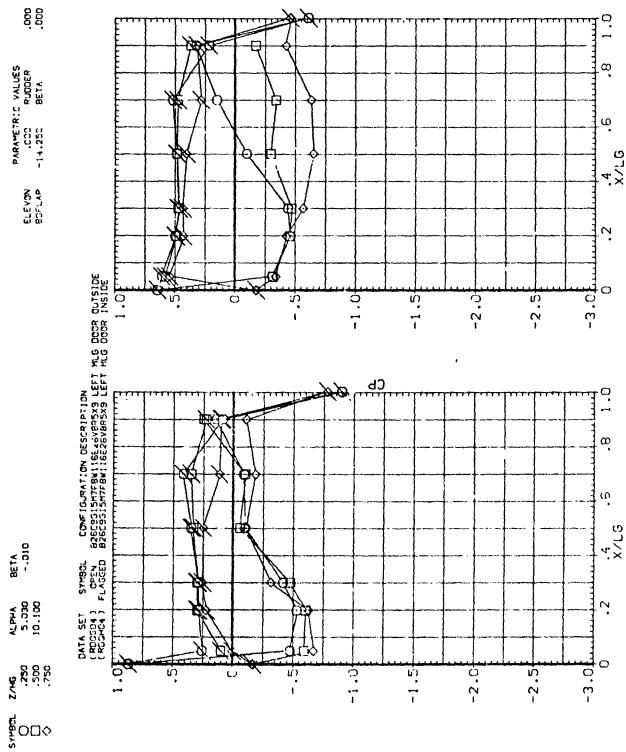


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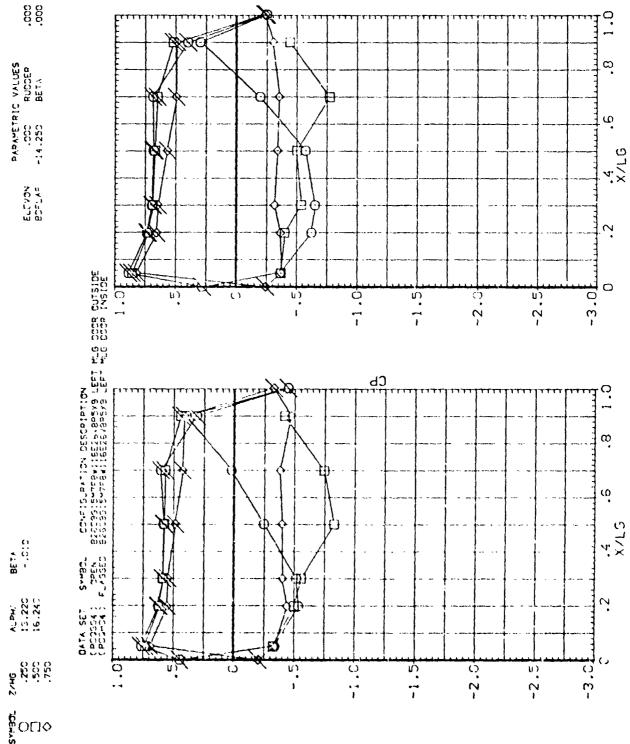
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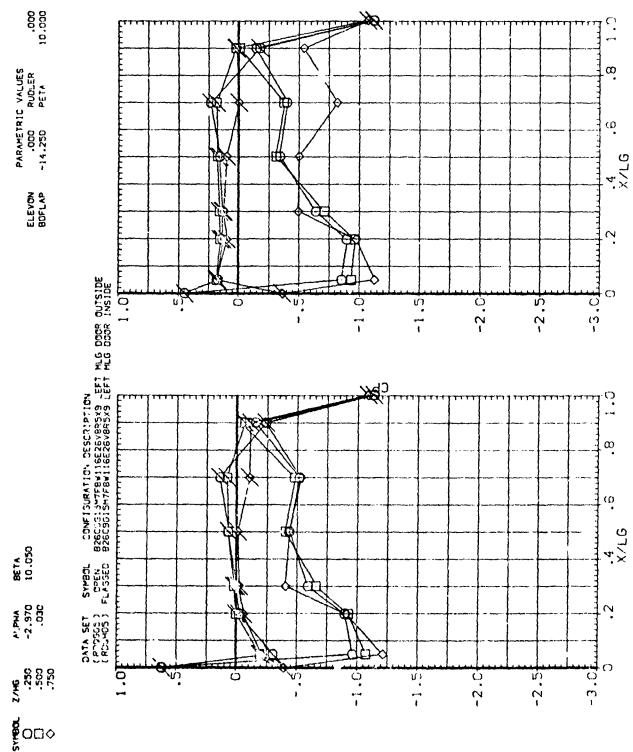
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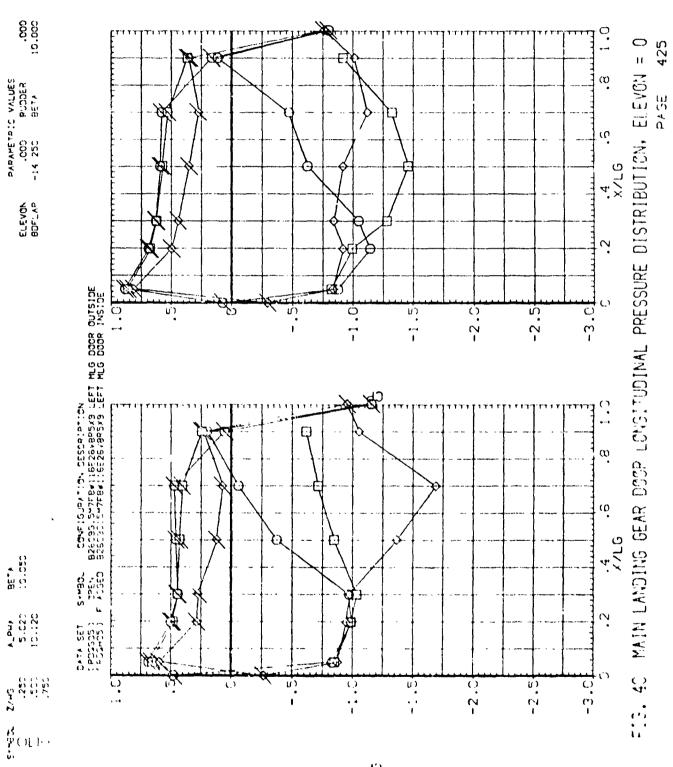
FIG. 40 MAIN LANDING SEAP DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEYSN = 0

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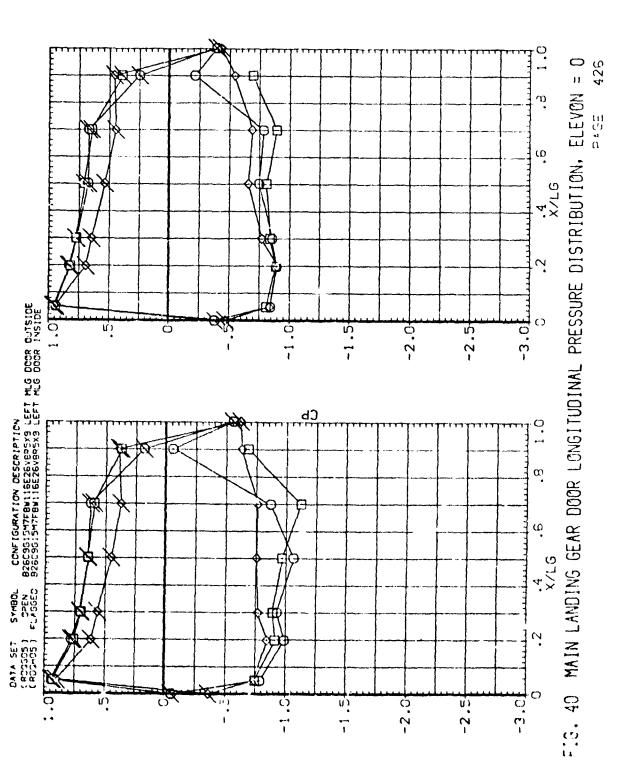


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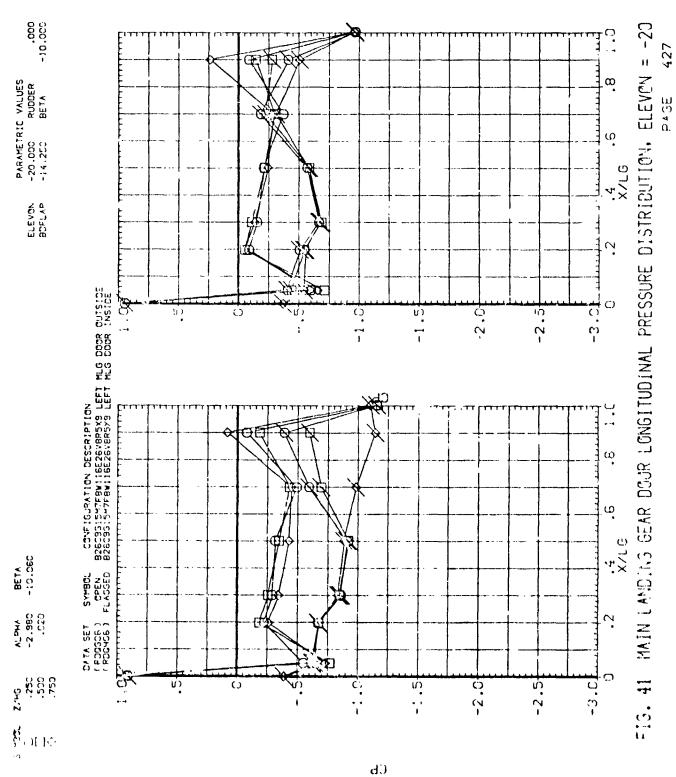
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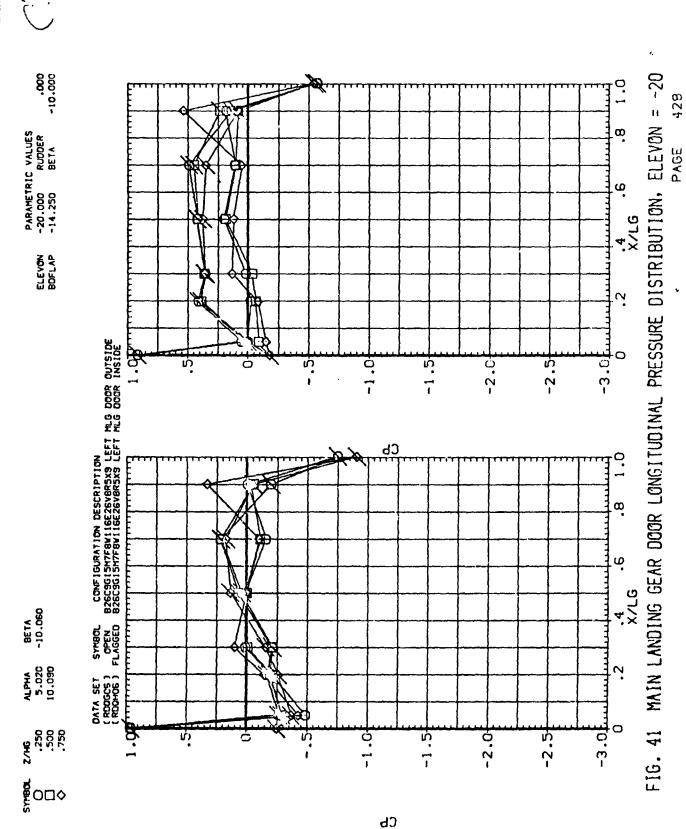


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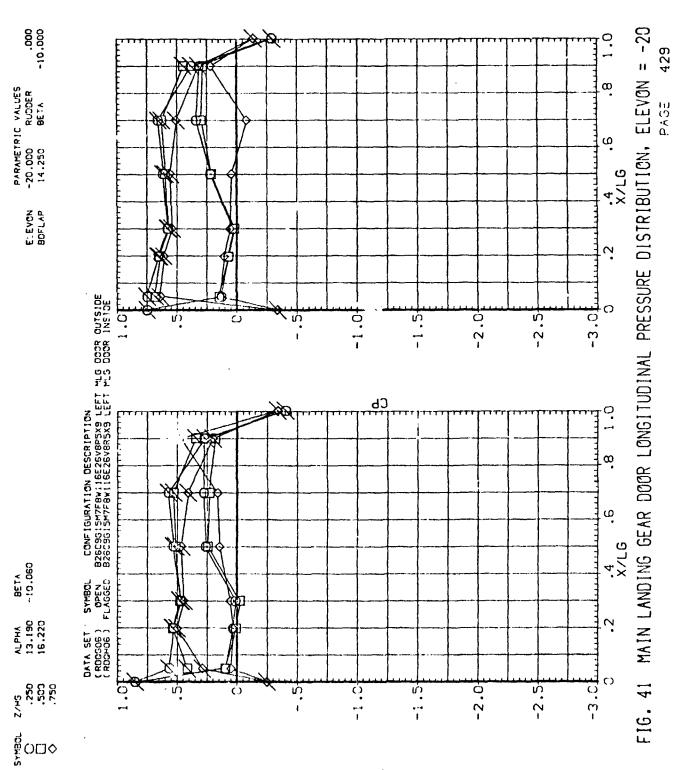
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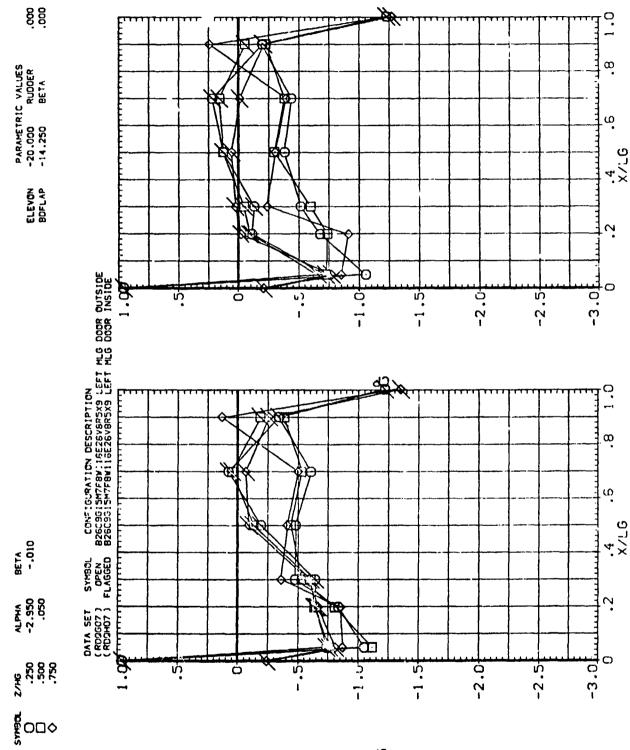
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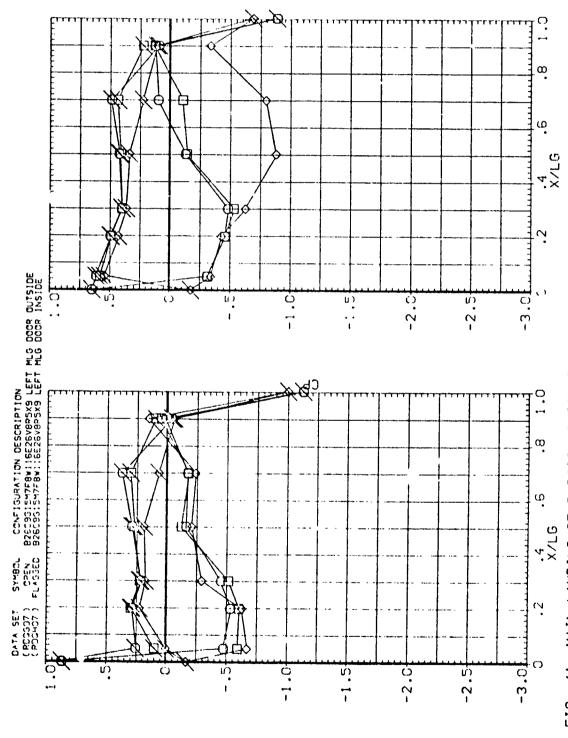


MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -20 FIG. 41

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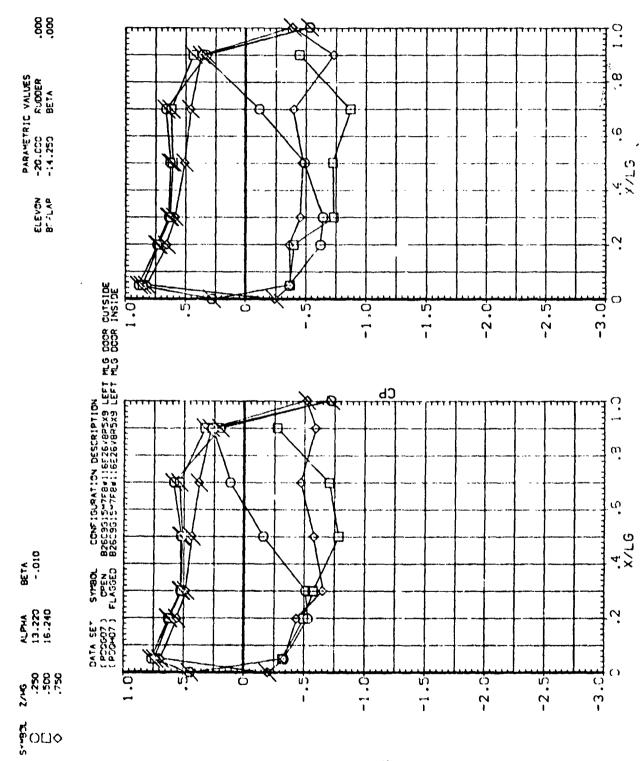
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MAIN LANDING GEAP DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -20 FIG. 41

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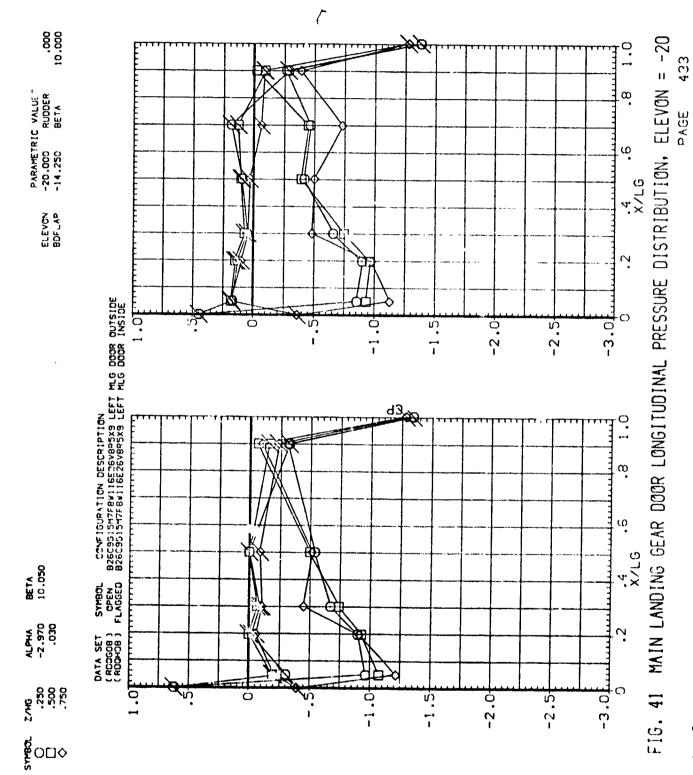
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FIS. 41 MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -20

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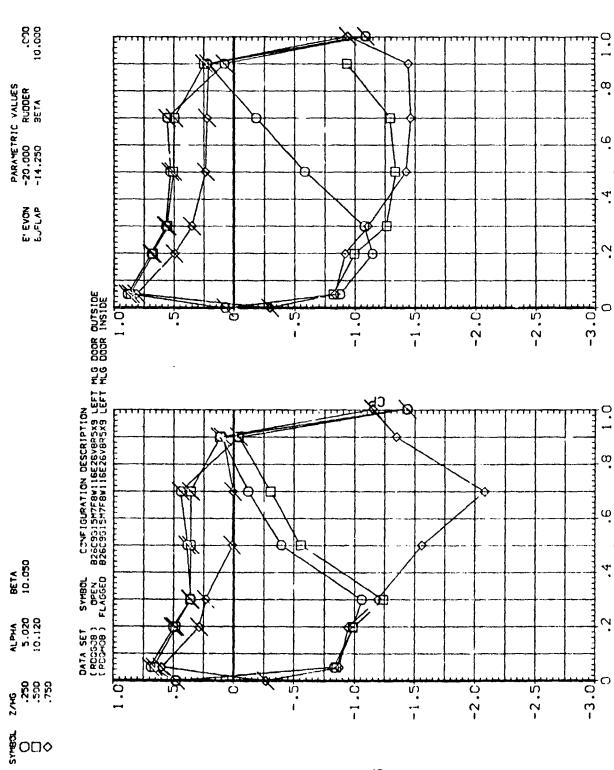
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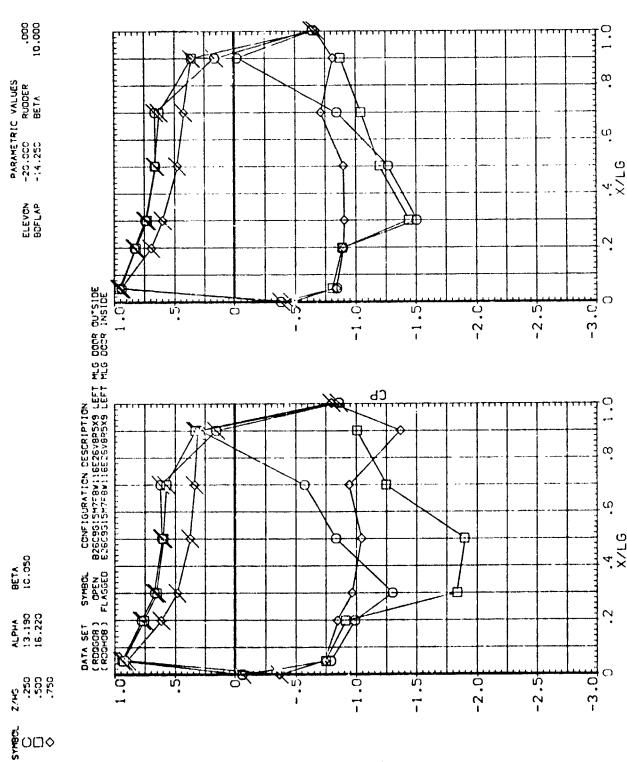


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MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -20 FIG. 41



MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION. ELEVON = -20

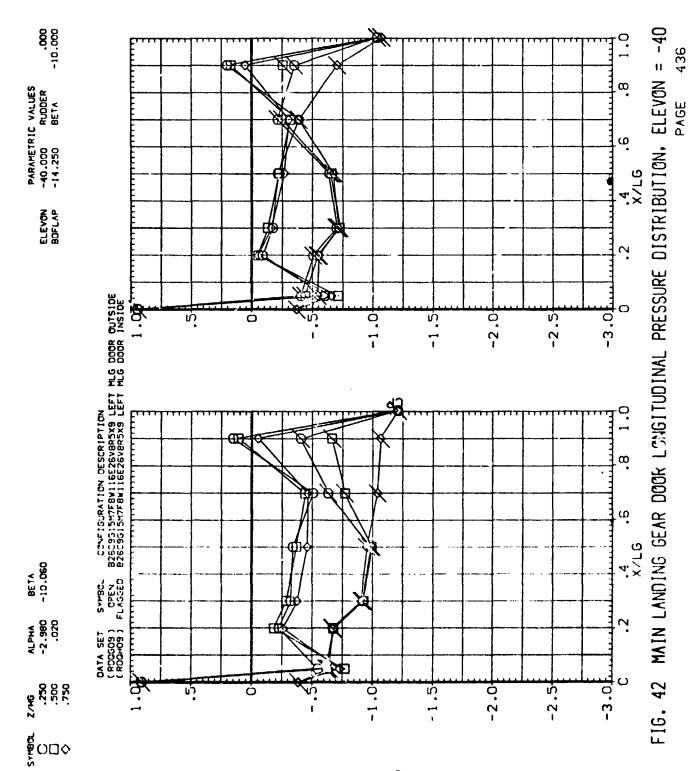
FIG. 41

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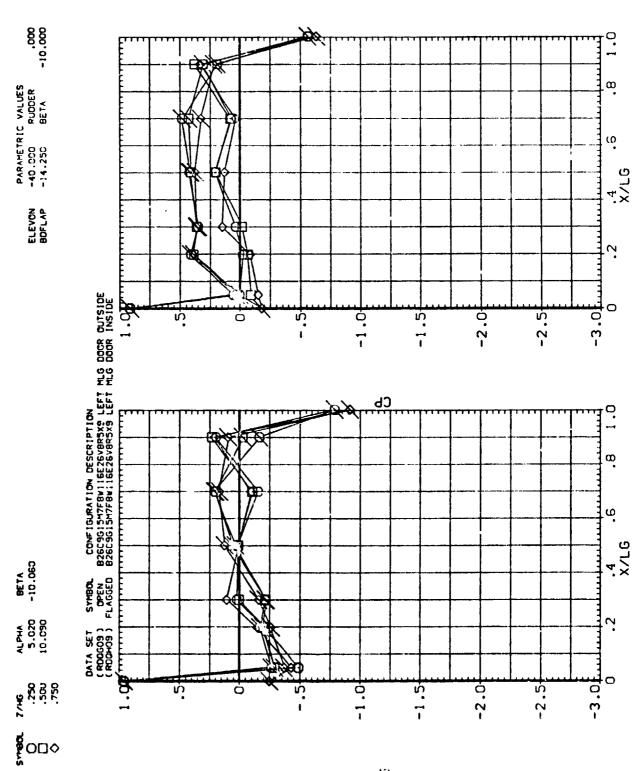
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FIG. 42 MAIN LANDING GEAR DOGR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -40

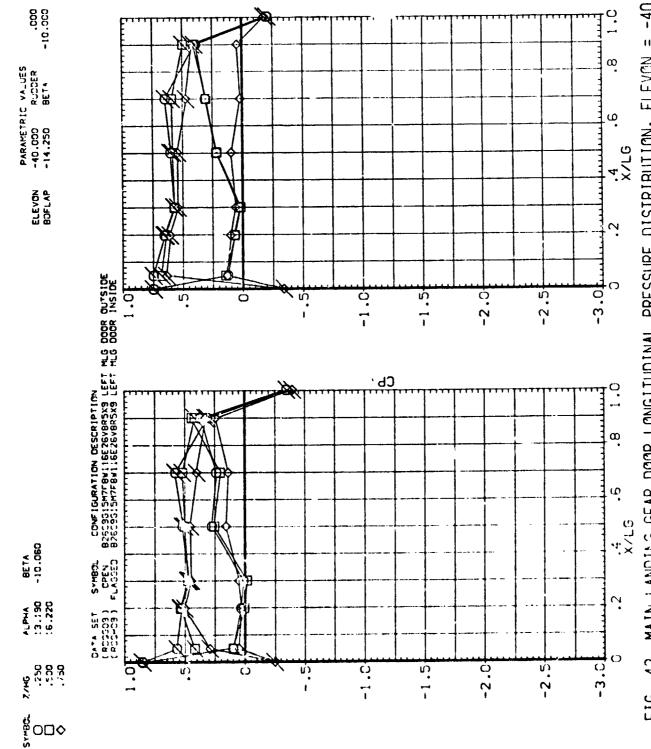
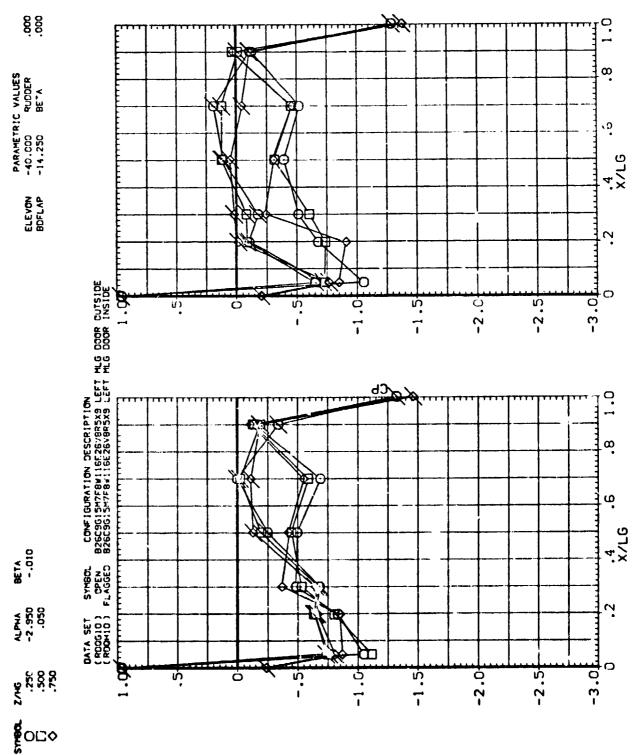


FIG. 42 MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION. ELEVON = -40 438 DAGE

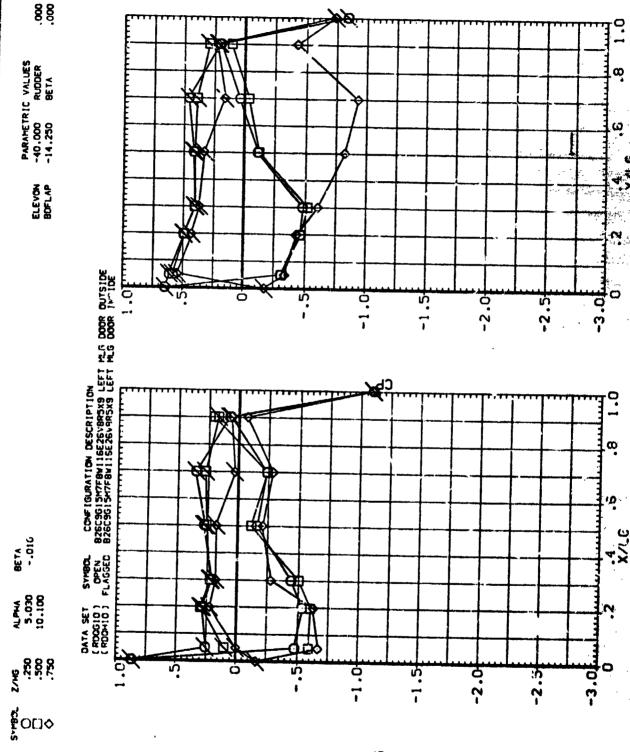
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FIG. 42 MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -40



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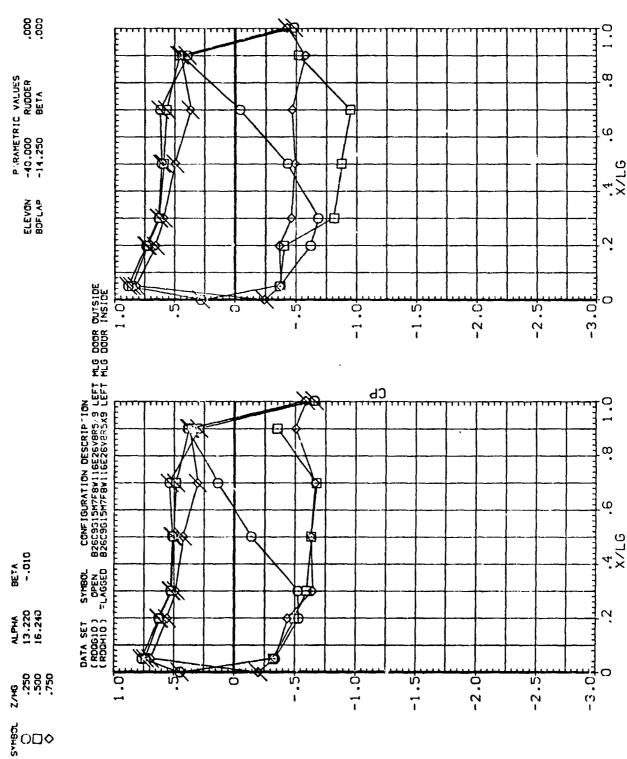
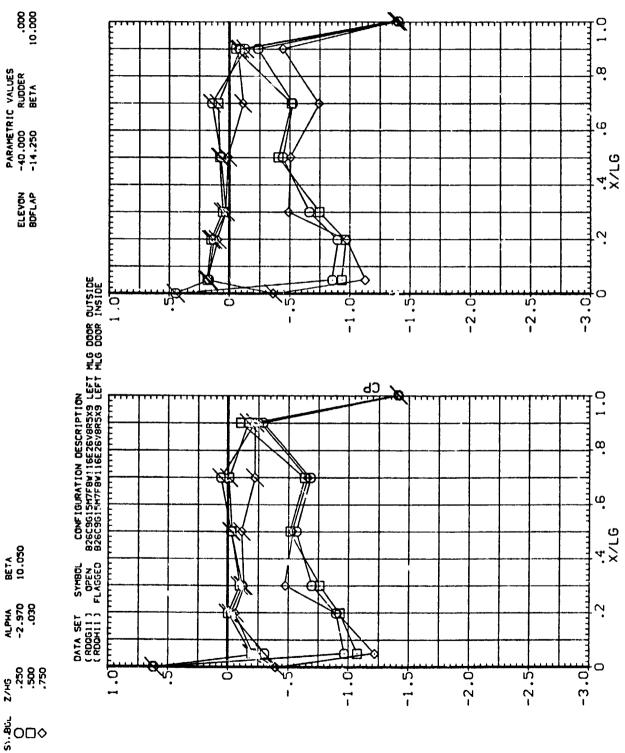


FIG. 42 MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -40

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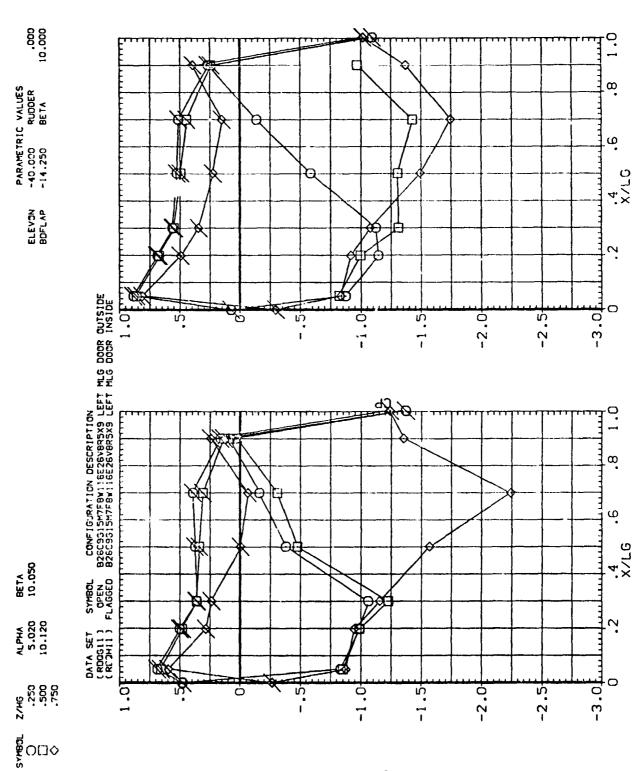


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FIG. 42 MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -40

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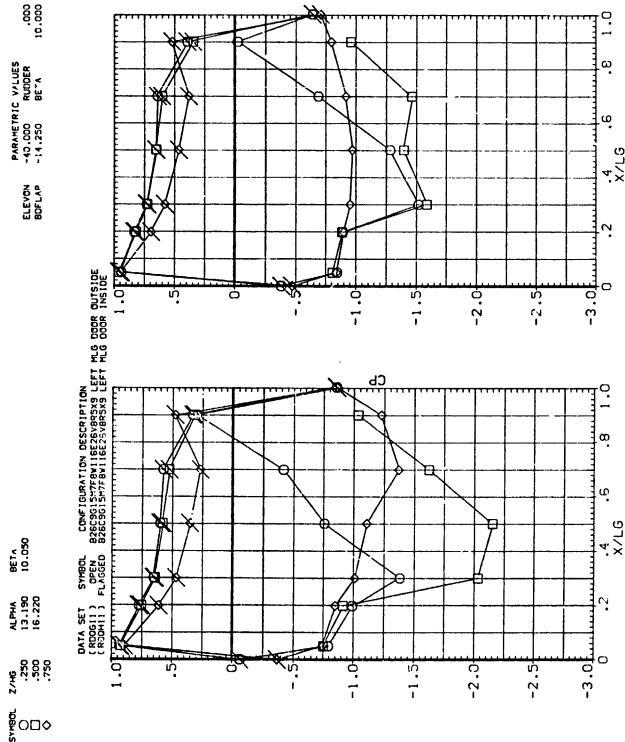


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FIG. 42 MAIN LANDING GEAR DOOR LONGITUDINAL PRESSURE DISTRIBUTION, ELEVON = -40

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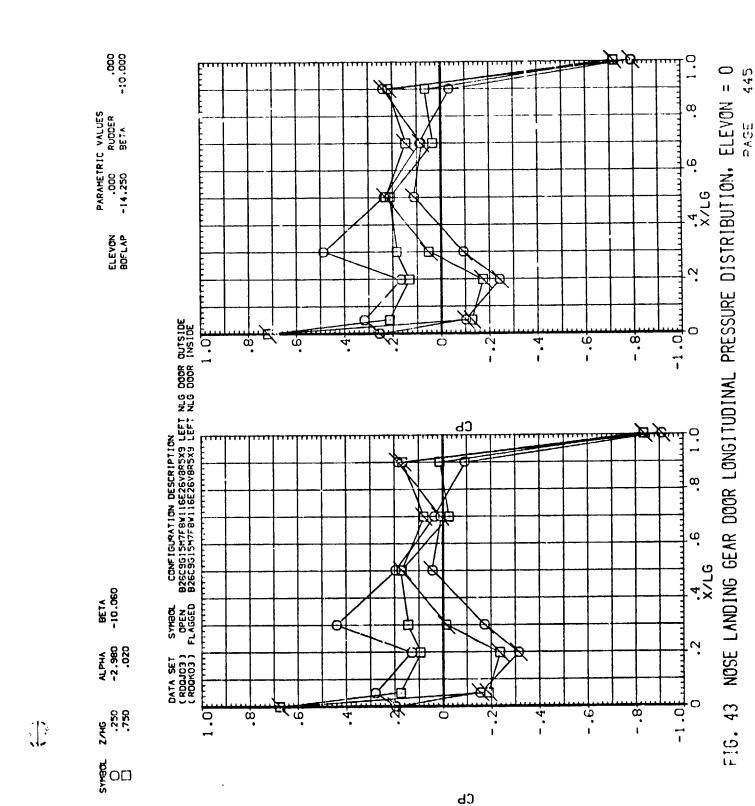


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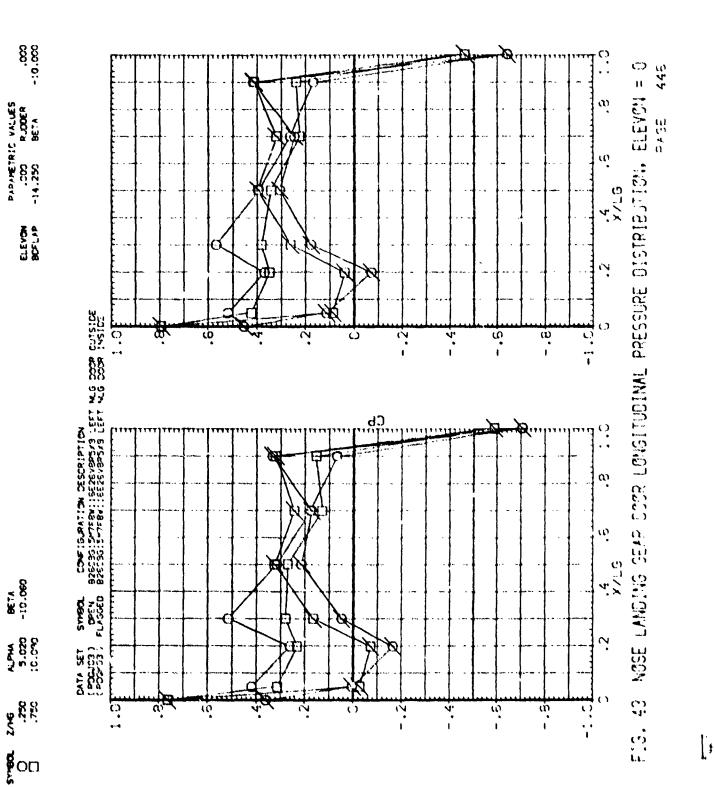
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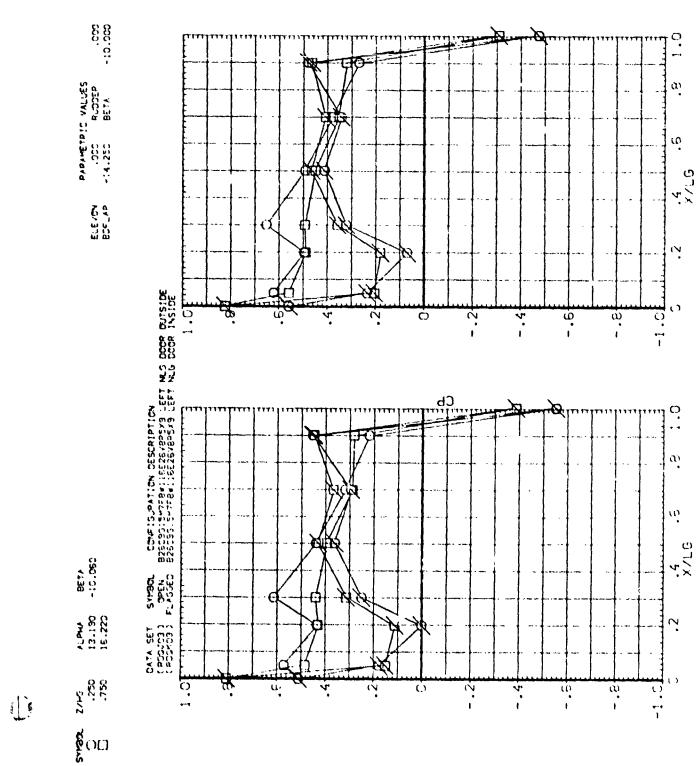
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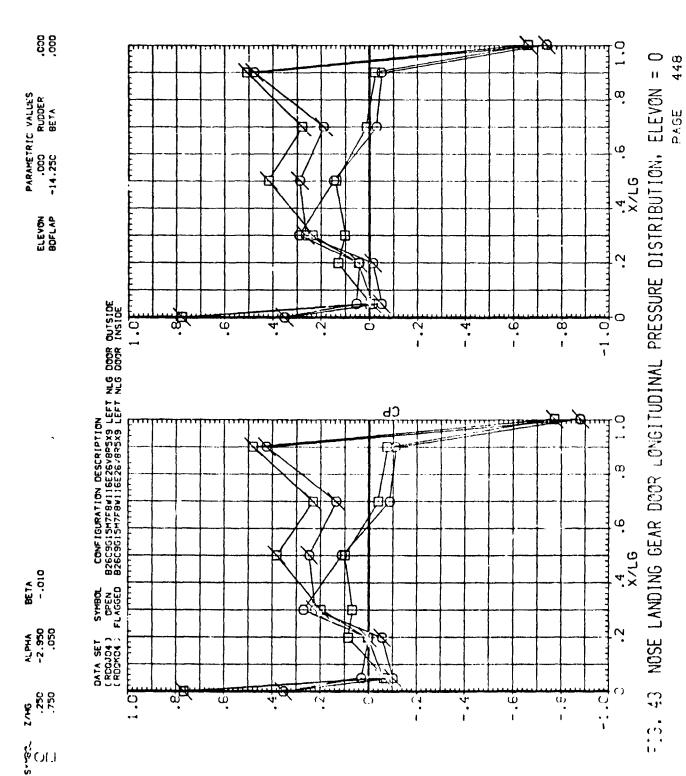


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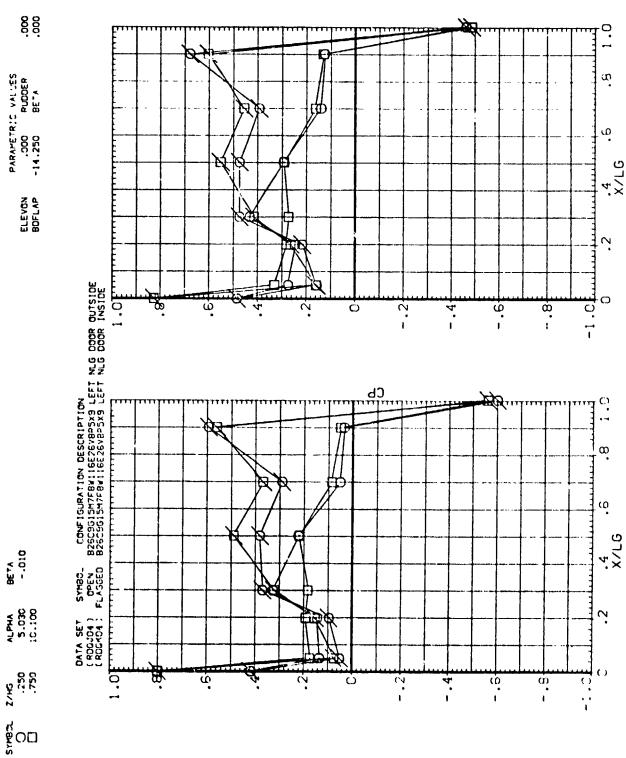
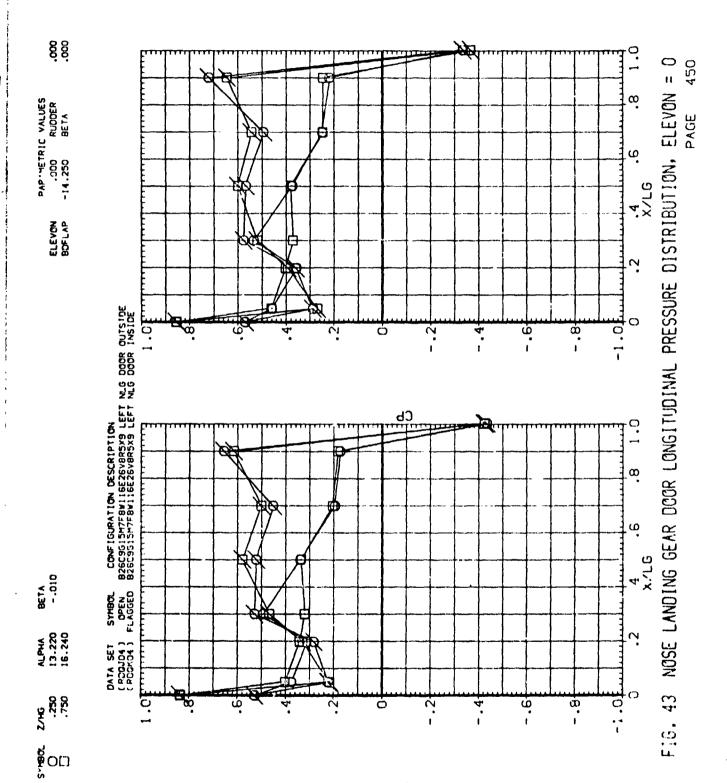
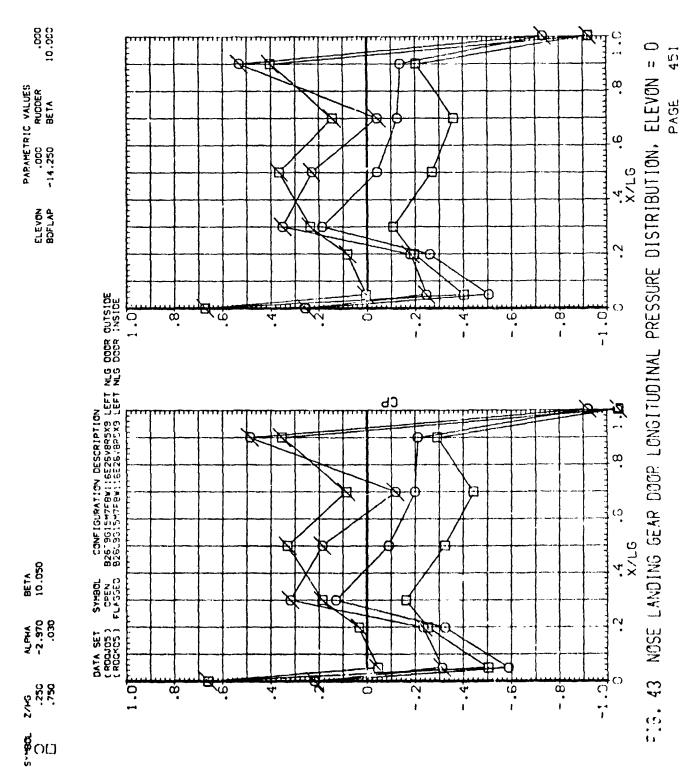


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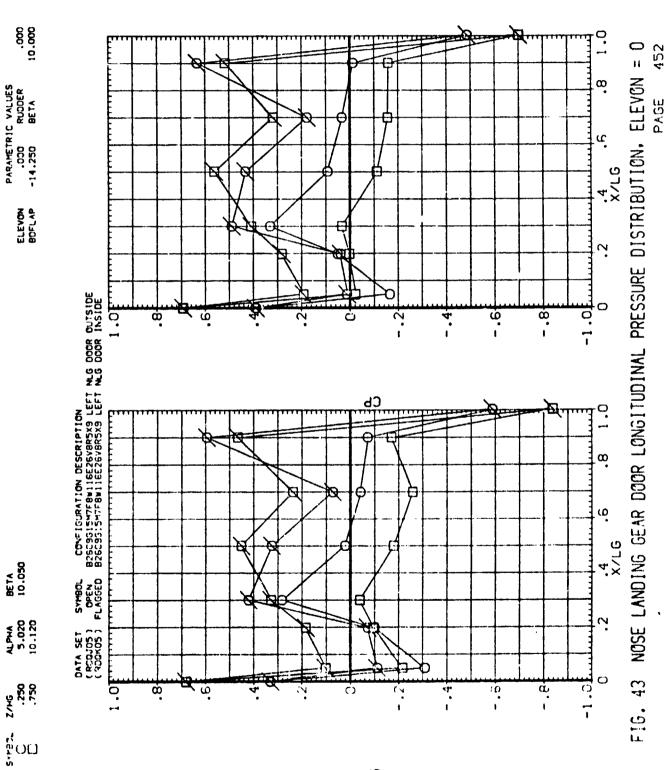


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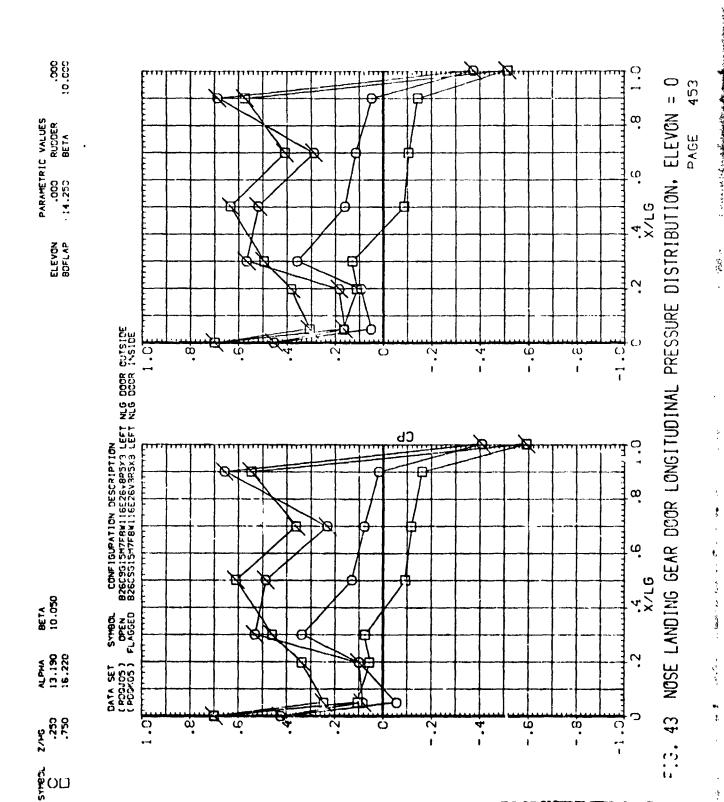
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